NATIONAL MUSEUM OF VICTORIA

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VICTORIA · · · AUSTRALIA

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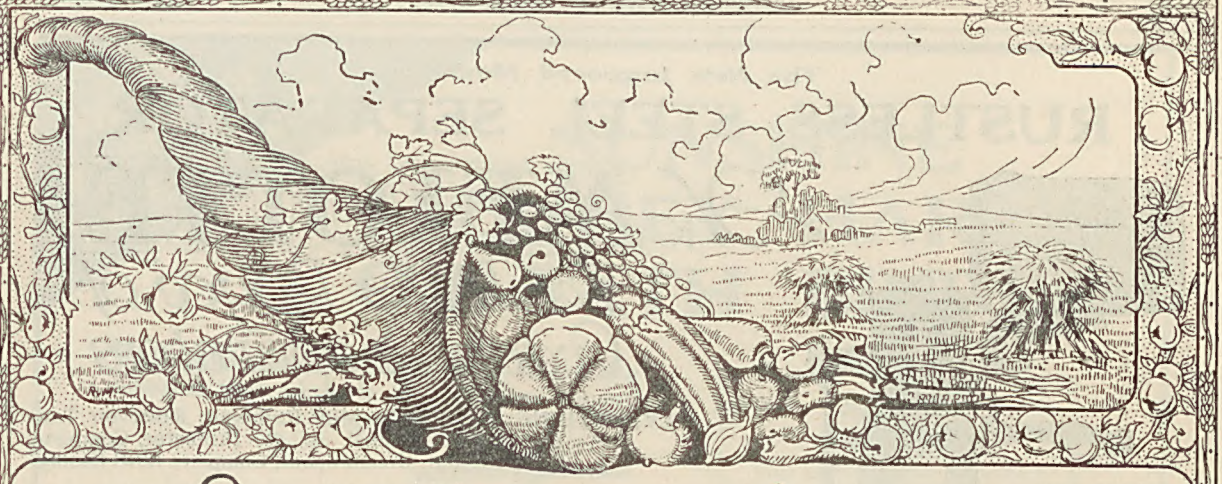

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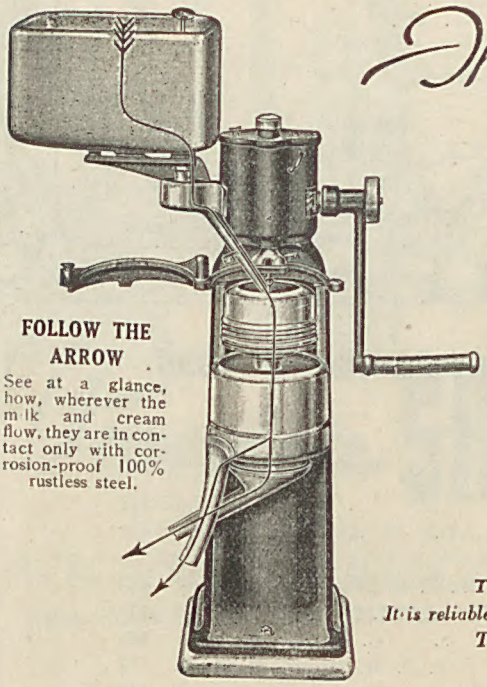

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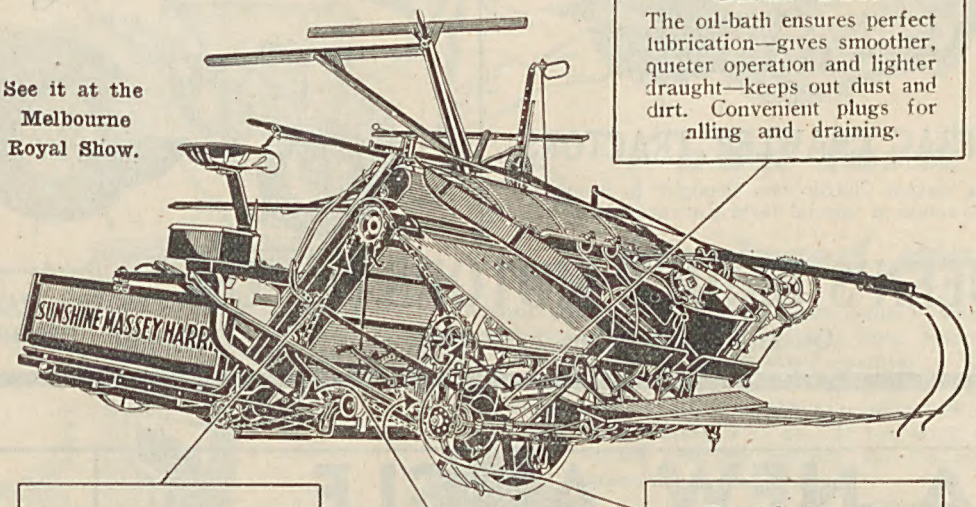

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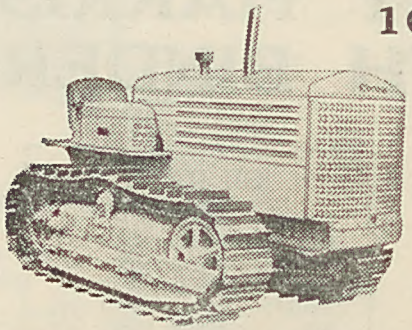

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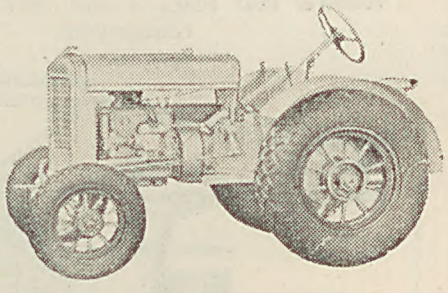

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NATIONAL MUSEUM OF VICTORIA

The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

September, 1938.

Standard Herd Test

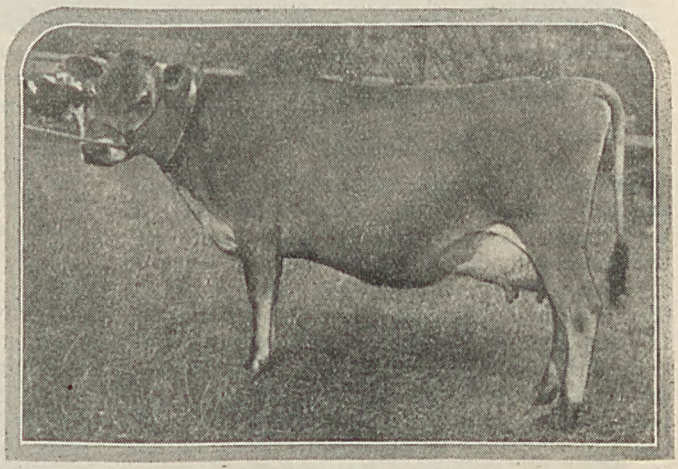
Report for the Year 1937-38

By W. J. Yuill, Supervisor of Herd Testing

THE Standard Herd Test for 1937–38 was marked by generally satisfactory yields, the average return for all cows being 345 lb. butter-fat, or 2 lb. more than in the preceding year.

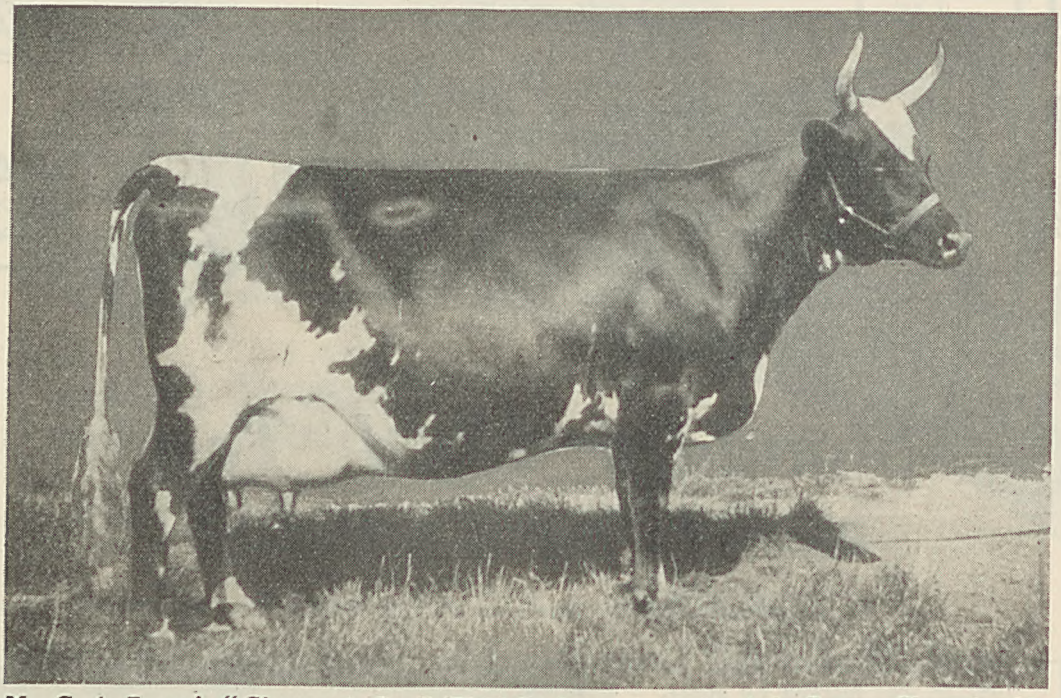
During the year, 1,511 pure-bred cows were tested and, of that number, 1,111 qualified for the certificates. No fewer than 89 individual cows yielded more than 500 lb. butter-fat, while fifteen exceeded the 600 lb. level, four others being over 700 lb. and one over 800 lb.

An outstanding feature of the year's results was the excellent record of 826 lb. butter-fat put up by Mr. E. J. Vagg's persistent producer, "Jerseyinn Edith 2nd." This yield has only once been exceeded by a Victorian Jersey cow. Her yield of 826 lb. followed one of 750 lb. in the previous year, when she was Reserve Champion producer. Her yields were influenced by thrice-a-day milking.



"Jerseyinn Edith 2nd," Mr. E. J. Vagg's Champion cow, 826 lb. butter-fat.

An even more remarkable performance was that of "Mornmoot Princess Madeira." Her yield of 794 lb. being precisely the same figure as in the previous year. These yields were recorded on twice-a-day milking. "M. Princess Madeira" came very close to winning the special prize of £100, which goes to the cow that captures the State Championship on three occasions. Since this prize was first offered in 1914, "Willow Park Cherry" has been the only successful competitor, although several others, like "M. Princess Madeira," have won it on two occasions. Another outstanding performance was that of Mr. G. A. Fraser's Ayrshire cow, "Glengowrie Ray," her yield of 794.5 lb. exceeding the previous record for the breed by 105 lb. It is also worthy of note that, despite the partial drought conditions in some parts of the State, more cows exceeded the 500-lb. level than in the previous year.



Mr. G. A. Fraser's "Glengowrie Ray" (794·5 lb. butter-fat) missed the Reserve Championship because she failed to recalve within the time prescribed. She raised the previous record for the breed by 105 lb.

The Season.

Generally, the mild winter was followed by an early spring, which continued favorably in the coastal districts. On the other hand, very unfavorable conditions existed inland, owing to the very dry weather which set in about Christmas time, and continued until late autumn. In these circumstances, it is satisfactory to note, that thirteen of the herds of more than ten cows exceeded the 400-lb. butter-fat level, this number being increased to 35, when all age allowances were added. Five of the latter exceeded the 500-lb. mark, last year's champion herd again heading the list with the splendid average of 496 lb. actual butter-fat, or 570 lb. with the usual age allowances for the junior cows. Mr. R. M. Chirnside's "Mornmoot" Jerseys have thus gained the herd championship for the fourth consecutive year.

A serious contender for championship honours has arisen in Mr. F. W. Clarke's "Mer Vue" herd. The 495 lb. actual butter-fat average recorded by the nine entries of this Jersey herd in the 1936–37 test, has been followed by one of 470 lb. for fifteen cows this year. Mr. Clarke has had a long testing experience, being one of the pioneers of the Association system of herd testing; and one of the representatives at the first Conference, which was held at Stony Creek in 1923. "Mer Vue Joy," 595 lb. butter-fat, second in the senior three-years-old section, and "M. V. Sister," leading junior two-year-old with 469 lb. butter-fat, are splendid young cows from this herd.

When allowances are added to the splendid yields of the junior cows in the "Springhurst" herd, its 426-lb. butter-fat average becomes 508 lb., the third best average for the year. "Springhurst Sybil Nerine" leads the junior four-year-old class with 680 lb. butter-fat. This record follows one of 543 lb. as a junior three-year-old. Her paternal half-sister, "S. Sybil Narcissus," is fourth among the senior four-year-olds, with a yield of 562 lb. butter-fat. She is a worthy representative of the famous "S. Bulb" family, which includes many great cows, outstanding records being the eleven-year average of 457 lb. butter-fat by "Tulip 2nd," the nine-year average of 554 lb. by "Narcissus," the eight-year average of 486 lb. by "Gladiolus 2nd," and the eight-year average of 509 lb. by "Gladiolus."

The "Tooravale" Jersey herd once again occupies fourth position on the list. Its twenty

entries yielded an average of 441 lb. butter-fat, and exceeded 500 lb. when allowances were added. Mr. G. A. Fraser's "Bonnie Doon" Ayrshires have also done remarkably well. Last year's leading junior two-year-old, "Bonnie Doon Beth," showed her consistency by heading the junior three-year-old class with a yield of 684 lb., exceeding that of her nearest rival by 173 lb. butter-fat. "B. D. Snowdrop" completed two lactations during the year, each yielding more than 550 lb. butter-fat. Her return of 555 lb. placed her sixth in the senior four-year-old section. "B. D. Honey," with 597 lb. butter-fat, fourth among the junior four-year-olds, is a worthy daughter of "B. D. Heather," whose yield of 625 lb. butter-fat in 1937, was followed by one of 735 lb. "Heather" is therefore, a noted producer, as well as a reproducer. "Glengowrie Ray's" record is referred to elsewhere in this Report.

The 421-lb. butter-fat average of Capt. A. E. T. Payne's seventeen "Yarraview" Guernseys, gives prominence to a breed that enjoys extensive popularity in the leading dairy States of America. The next three positions are filled by herds of about equal merit. Two of these—the Werribee Research Farm and the Salesian College Friesians—represent the oldest known breed of dairy cattle; the other being Mr. W. H. Hurrey's 24 "Kooreena" Jerseys. These herds averaged 462 lb. butter-fat with allowances for junior cows.

Mr. P. J. Maloney's mature Jersey "Belgonia Eileen 2nd"—621 lb. butter-fat.

In the section for herds of more than 25 cows, some good performances were recorded by very large herds. The 49 entries of the "Willow Park" Dairy Shorthorn stud occupy pride of position, with an average yield of 370 lb. butter-fat. A feature of this yield is the 423-lb. average of the eighteen mature cows. One member of this herd, "Willow Park Moss Rose 9th," appears in the senior four-year-old section with a yield of 558 lb. butter-fat, and 45 lb. milk on the last test day. Her dam, "W. P. Moss Rose," has a ten-year average of 492 lb. butter-fat, while her sire, "W. P. Reflector," is a son of the Grand Champion Test Cow, "W. P. Cherry," whose ten-year average yield is 599 lb. butter-fat.

The "Maxon" Jersey stud of Messrs. McNabb and Son, and the well known "Banyule" stud,

Portion of Messrs. J. E. Handbury and Son's "Tooravale" Jerseys. This herd has occupied fourth position for the past two years. Twenty cows averaged 441 lb. butter-fat (501 lb. with allowances).

each tested more than 40 cows, and each averaged 430 lb. butter-fat with allowances for junior cows. Under similar conditions, the 55 Red Poll entries from the Werribee Research Farm, got within striking distance of the 400-lb. level, largely owing to the fine performances of the junior cows, which are by "Peter Pan," a son of "Marsden Mindful," an imported cow which has a test record of 723 lb. butter-fat in the Association Herd Test.

The Ballarat Orphanage herd, and that of Messrs. Smith Bros., "Sylvan Hill," each of 30 or more cows, both exceeded the 400-lb. mark. Ten of the herds of ten to fourteen cow size also averaged above the 400-lb. mark when allowances were added for the younger stock. "The Wattles" herd again exceeded 500 lb., as in the previous year. Messrs. T. M. Noble and Sons' "Finchley" herd of twelve cows had the highest yield of butter-fat in this section, and it again occupied second place. The 371-lb. butter-fat average of five junior two-year-olds owned by Messrs. Vaughan Bros., helped materially to bring their herd into third place with a yield of 474 lb. (with allowances). Mr. T. S. Powell of Mansfield, is another young breeder to gain prominence. His twelve-cow herd, which is mainly of "Werribee" breeding, had a butter-fat average of 425 lb.

The list on page 432 gives particulars of many other fine herds, while the general report provides the details of yet other herds of less than ten cows. Among these herds in the making, there are some that exceeded the 400-lb. butter-fat level. They include the herds of Messrs. A. J. Calf, Werribee South; S. Masters, Swan Hill; S. C. Handley, Dandenong; F. A. Williams, Bamawm; O. Ronalds, Tarago; J. E. Chadderton, Hamilton; and R. H. Mitchell, Linton. Last year's Reserve Champion Herd was, until recently, of similar size; therefore, further surprises may come from this section at any time.

The five top cows in Mr. G. A. Fraser's Ayrshire herd.

Mr. E. J. Vagg's junior four-year-old Jersey "Rydon May Queen 2nd"—648 lb. butter-fat.

Champion Cow.

"Jerseyinn Edith 2nd," Mr. E. J. Vagg's champion cow, is a remarkably persistent producer, as is shown by her yields of 608, 678, 750, and 826 lb. butter-fat respectively. During the past three years she has been milked three times daily, finishing the test each time with 37 lb. of milk, these records giving her the reputation of being one of the really great producers of the breed. This Jersey record has been exceeded only once, viz., in 1925, when "Babs of Somerville" yielded 843 lb. butter-fat, which at that time constituted a British Empire record for a senior four-year-old cow of the breed. "Edith 6th of Melrose," dam of "Jerseyinn Edith 2nd," gave 430 lb. butter-fat as a junior three-year-old, being one of the many high testing daughters of "Handsome Boy 5th of Melrose," whose sire was the imported bull "Pretty Noble." The sire of the champion cow was "Werribee Bluebell's Masterpiece," sire of many high producers. Mr. Vagg's junior four-year-old cow "Rydon May Queen 2nd," also performed meritoriously to win second place in her class, with a record of 648 lb. butter-fat. This was on three milkings a day.

Leading Cows:—1. Mr. F. W. Clarke's "Mer Vue Joy" 595 lb. butter-fat as a senior three-year-old, "Mer Vue Sister", 469 lb. as junior two and "Hazelgrange Mistress" 673 lb. as mature cow. 2. Mr. F. A. Williams' "Ballara Bonnie" 615 lb. as a mature Jersey (six years' average 589 lb.) 3. Mr. R. M. Chirnside's "Mornmoot Princess Madeira 3rd" 733 lb. butter-fat as a senior four-year-old. 4. "Werribee Princess Satisfaction" also owned by Mr. Chirnside, 657 butter-fat as a mature cow (six years' average 662 lb.) 5. Capt. A. E. T Payne's Guernsey "Yarraview Ella", 685 lb. as a senior four-year-old. 6. Mr. G. A. Frazer's "Bonnie Doon Honey", 597 lb. butter-fat as a junior four-year old, "B. D. Heatherbell" 351 lb. as a junior two, "B. D. Heather" 735 lb. as a mature cow; (i.e. mother and two daughters). 7. "Lucerne Vale Masters Queen 2nd", owned by Mr. N. C. De La Rue, 617 lb. butter-fat as a senior three-year-old. 8. Mr. J. D. Read's "Springhurst Sybil Nerine" leading junior four-year-old Jersey, 680 lb. butter-fat. 9. Some members of Messrs. T. M. Noble and Sons' "Finchley" stud. 10. Mr. J. H. Goddard's "Donside Lydo Lady" 672 lb. as a mature cow. 11 "Ballara Garennes Fancy" owned by Mr. F. A. Williams, 608 lb. as a mature cow. 12. Mr. R. M. Chirnside's "Werribee Mimi", 646 lb. butter-fat. 13. "Mornmoot Princess Madeira", the Reserve Champion cow, 794 lb. butter-fat (five years, average 671 lb) also owned by Mr. Chirnside. 14. Messrs. J. E. Handbury and Son's "Starbright 7th", 583 lb. butter-fat, "Princess 6th" 630 lb. and Princess 9th five years average 529 lb. butter-fat.

Messrs. Vaughan Bros. "Lynroy Pixie 2nd," 619 lb. butter-fat as a junior four-year-old.

The Reserve Champion Cow is Mr. Chirnside's "Mornmoot Princess Madeira," champion producer for 1936–37. Her five years' average is now 671 lb. butter-fat. Mr. G. A. Fraser's "Glengowrie Ray" actually led the Reserve Champion by half a pound of butter-fat but missed the reserve prize owing to her failure to recalve within the stipulated period of fifteen months. The owner of the "Bonnie Doon" herd is a great stock feeder. His test cows are fed liberally with crushed oats and lucerne chaff, both of which are home grown. There are some excellent young cows in this herd, which should, therefore, occupy a prominent place among all breeds for some time to come.

Mr. J. H. Goddard's Ayrshires suffered somewhat from a move to a new district. When they settle down they will be again in the running for recognition. His beautiful cow "Donside Lydo Lady," shows her great value by her yield of 672 lb. butter-fat and her numerous show-ring honours.

"Werribee Princess Satisfaction," a really famous Jersey cow, occupies sixth place among the mature cows. Her present yield of 657 lb. butter-fat was preceded by five of more than 580 lb., two of them being over 700 lb. Her six-year average to date is 662 lb. butter-fat, her best yield being 744 lb.

An unusual feature of the test was the good showing of the representatives of well known breeds, other than Jerseys. Despite the numerically small representation of these breeds, compared to the more popular Jerseys, they have done really well. Not since 1915 have three Ayrshires appeared in the list of the best six mature cows.

"Yarraview Ella," one of Captain A. E. T. Payne's Guernseys, was second in the senior four-year-old section, with a 685-lb. butter-fat yield (on thrice-a-day milking), while her daughter, "Y. Royal," was fifth in the junior two-year-old class with a return of 431 lb. butter-fat.

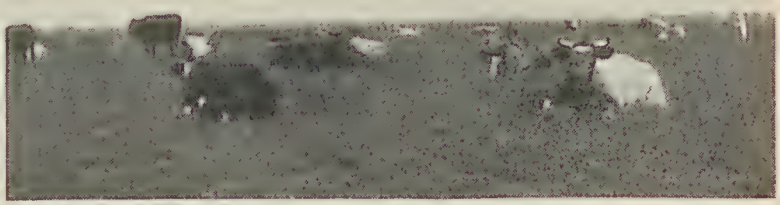
Messrs. Vaughan Bros.' "Pixie 2nd," with a 619-lb. yield as a junior four-year-old, brings a new stud name among the leaders, as does also "Lucerne Vale Master's Queen 2nd," a member of Mr. N. C. De La Rue's herd, which has been under test for many years. The latter cow's yield of 617 lb. is a good one, when it is realized that Weering has a very unreliable rainfall, and it reflects great credit on both the owner and the cow. Mr. S. C. Handley's "Barrowby Rosalind" was fifth in the senior three-year-old section with 545 lb., while his "Barrowby Rose Fancy" was second in the junior three-year-old class with a return of 511 lb.

Two thrice-a-day milked Friesians occupied fifth and sixth positions in the senior two-year-old class; "Rupertswood Bessy," with 444 lb. butter-fat, being owned by the Salesian College, while Mr. J. K. Van Brummelen's "Bolero Venus Dawn" was but 9 lb. lower in her yield.

The junior two-year-old section contains six different breeders whose entries exceed 427 lb. butter-fat. Mr. Clarke's "Mer Vue Sister" being on top with the excellent yield of 469 lb. butter-fat.

In last year's test all the section positions, except three, were occupied by Jerseys. On this occasion, no less than twelve places are filled by breeds other than Jerseys, an excellent showing indeed, considering the small representation of these breeds being tested.

The Dookie College Herd of sixteen Ayrshires, had the good average yield of 368 lb. butter-fat, seven mature cows averaging 428 lb. Salesian College had eight mature cows which averaged



"Willow Park" Dairy Shorthorns, lying down in the lucerne.

482 lb. Largely owing to the fine showing of their junior cows, Messrs. Meaklim Bros.' eleven Dairy Shorthorns averaged 419 lb. butter-fat with allowances.

Is High "Test" All-sufficient?

Breeders and farmers hold various opinions as to whether high test is all-sufficient or not, but careful examination of the question should convince us that it definitely is not. Generally, dairy-farmers are concerned with the sale of milk or butter-fat, and when these are not in sufficient quantities to meet all farm costs, it is of little moment whether the "test" be high or low. It is true that the high-test character has some advantages; but if the quantity of milk that goes with the high test be too low to be profitable, then any advantage that might have occurred has largely disappeared.

It is generally true that the smallest yielders of milk are the highest testers—and the opposite also holds good. Now and again we find cows like "Viva La France," one of the first American cows to produce over 1,000 lb. butter-fat in two consecutive years, who possessed both the high yield and high test characters. (She tested 7 per cent. with over 15,000 lb. of milk.) Coming nearer home, "Glengowrie Ray" who, during last year, broke the Ayrshire record, exhibited a high test for the breed, as did also the previous champion "Poppy of Ben Kell." Each of these cows tested over 5 per cent., whereas the average test of the breed is approximately 4 per cent.

Large breeds of dairy cattle like Friesians, Guernseys, and Shorthorns have a much greater maximum milk yield than the well-known smaller breeds; but the small breeds generally exhibit a higher percentage of butter-fat. Some individuals and families are highly prepotent in the high percentage of butter-fat character; and it is equally true that some breeds and families are highly prepotent for high milk yield and low test.

We are apt to forget that there are a great many continential breeds of cattle quite unknown to the average Australian dairy farmer. Fifty years ago there were said to be up to 100 breeds of cattle in France alone, even to-day there are 26 with stud-book registers. In Switzerland, the Brown Swiss and Simmental breeds are highly developed, while the Bavarian Spotted breed, has many great cows. Recently one produced 146 lb. milk in 24 hours, while another cow "Freija," while under control of the Imperial Bureau of Animal Genetics, produced 159 lb. milk, 4·98 test and 7·83 lb. butter-fat in 24 hours. Her live weight was 1,595 lb. The three breeds in Holland show little difference in yields, although the Friesian is the most widely known. Germany has her 1,000 lb. butter-fat cows. She also has many breeds; so too has Denmark, Sweden, and other European countries. The little Brittany cow of France has a higher average test than even the Jersey; while most of the large breeds have a relatively low test.

In Denmark, an effort is being made to raise the average test of the Red Danish and the Danish Black and White breeds. To assist this effort "Figure 4" bulls are recommended, i.e., bulls from dams which have yielded 400 kilograms (8,800 lb.), of 4 per cent. milk for a period of at least four years. Despite their low average test, these breeds make high yields of butter-fat, as is shown by the 309 lb. average return from 679,000 mainly pure-bred cows. Of the 69 cows to exceed 779 lb. butter-fat, all but nine, were of the popular Red Danish breed.

Both the dairy farmer and the breeder are concerned with the question of whether high test is of itself all-sufficient, but largely from the standpoint of whether the revenue from milk or butter-fat sales, together with the value of the skim milk, will pay the interest bill, farm running expenses, and the labour charges. They are also concerned in the question, whether the character exhibited is a homozygous one (i.e., breeds true to type)—or is even highly prepotent—for it is true that some excellent individuals are extremely hetrozygous (i.e., they do not breed true to type), for the character that creates their greatness. This applies alike to conformation, as it does to the production character, for show champions do not necessarily breed their like; neither do test champions. The reason is that they lack purity of character.

"Pretty Noble" (Imp.).					"Golden Fern's Viscount" (Imp.).				
Records Reviewed.	——	Milk.	Test.	Butter-fat.	Records Reviewed.	——	Milk.	Test.	Butter-fat.
		lb.	%	lb.			lb.	%	lb.
100	20 Dams ..	6,912	5·27	364	113	40 Dams ..	7,060	5·8	413
130	25 Daughters ..	6,858	6·11	419	230	62 Daughters ..	6,744	5·8	388

The best evidence of purity must be the continuance of the character in the progeny.

Evidence of this is illustrated in the background of the herds referred to in this report. The Jersey Island cow "Boutillere" was famed for her high record of 799 lb. commercial butter. Her high yields came largely from her unusual milk flow. Yet each of her sons that were imported to the Melrose Stud, definitely exhibited the high test character; and neither bull was able to maintain in their daughters, the medium milk yield of their dams. They did, however, develop a remarkably high average test. In the case of "Pretty Noble," the average of 130 daughter records was nearly one per cent. higher than the average of their dams, while "Golden Fern's Viscount's" exceedingly large number of tested daughters equalled that of their high-testing mothers. This is demonstrated clearly in the table on previous page.

Although "Pretty Noble" was not appreciated by some breed judges, and although he did not favourably influence the average milk yield of his daughters, it must be noted that he did not materially decrease it. He did, however, reveal a remarkably high degree of prepotency in the high test character. This is abundantly shown in the high average test of so many daughters, and in the daughters of his sons. "Golden Fern's Viscount" was mated with many of his half-brother's daughters and was not so successful in either the milk yield or test character. Some of his daughters, however, were splendid cows.

Rosemont Jerseys.

When Mr. R. Maher began to test his Rosemont stud in 1920, he purchased some daughters of "Viscount" ex "Pretty Noble" cows. One such was "Lassie Fowler 8th" who averaged 400 lb. butter-fat for eight years. Her dam "Lassie Fowler 4th" (by "Pretty Noble") averaged 428 lb. butter-fat for six years. Both cows were consistent, honest producers, each exhibited the high average test of the family—the former being third in the *Weekly Times* Test at the Royal Show in 1924. From "Lassie Fowler 8th" second, *Weekly Times* Test, 1925, came the real "foundation" or "mother" cow of Mr. Maher's herd, viz.:—"Lassie Fowler of Rosemont," her sire being the outcross bull "Banyule Cobber." This "Lassie" was champion dairy cow at Kyabram, and first in the Type and Utility Section at Melbourne in 1929, where she also won the *Weekly Times* and Capt. Payne Test. Her seven-year butter-fat average of 417 lb., and highest record of 9,206 lb. of 5·9 per cent. milk and 545 lb. butter-fat show her to be a really fine cow of the breed. At times her average test exceeded the 6 per cent. level, as did also that of her full sister "Rosemont Lassie Fowler 2nd" who also produced above 400 lb. butter-fat.

"Lassie Fowler of Rosemont," the foundation cow of Mr. R. Maher's herd.

"Lady Fowler 3rd of Rosemont," another high producer in Mr. Maher's herd.

From "Rosemont Lassie Fowler" (13,224) was bred the very numerous family of "Lady" and "Lassie Fowlers." Several of them were sired by the home-bred bull "Rosella 2nd Noble of Rosemont" (2,720), whose sire was "Carrie 5th's Noble," by "Pretty Noble" (Imp.). Each one of this family carried the high test character, so much in evidence in the stock bred close to "Pretty Noble" (Imp.). At present the herd contains many youngsters by the line-bred bull, "Golden Emblem" ex "Rosemont Lady Fowler 5th" ex the "mother" cow, "R. Lassie Fowler," his sire being "Duke of the Lake" (Imp.).

In the early years of test work, Mr. Maher fed his herd on a higher plane of nutrition than at present, but is now content to accept lower yields from lower costs. No concentrates are now used in the test cow's ration.

Among the successful bulls sold from this stud, were two from the "Lassie Fowler" family that went to Mr. S. Esler, whose herd of 41 cows, on an adjoining farm, averaged 407 lb. butter-fat. "R. Raleigh" ex "R. Lady Fowler 3rd," and by "R. Laddie Fowler 3rd," sired the junior two-year-old heifer which gained second place in the Tongala District Herd Test Association during 1937. Mr. Maher's objective is to raise the test of his herd—by which means he hopes to reduce the cost of production.

"Taranah" Jerseys.

For many years, the "Taranah" stud, established by the late W. Macauley, well known as a pioneer of the Nanneella Section of the

THE SIX LEADING COWS IN EACH SECTION.

Owner.	Name of Cow.	Class.	Breed.	Butter-fat.
				lb.
*E. J. Vagg	Jerseyinn Edith 2nd	Mature	Jersey	826.14
G. A. Fraser	Glengowrie Ray	"	Ayrshire	794.49
R. M. Chirnside	Mornmoot Princess Madeira	"	Jersey	793.96
G. A. Fraser	Bonnie Doon Heather	"	Ayrshire	735.14
*J. H. Goddard	Donside Lydo Lady	"	"	672.06
R. M. Chirnside	Werribee Princess Satisfaction	"	Jersey	657.40
R. M. Chirnside	Mornmoot Princess Madeira 3rd	Senior 4	Jersey	733.52
*A. E. T. Payne	Yarraview Ella	"	Guernsey	685.08
R. M. Chirnside	Mornmoot Clementine	"	Jersey	565.55
J. D. Read	Springhurst Sybil Narcissus	"	"	561.88
W. K. Atkinson	Willow Park Moss Rose 9th	"	Dairy Shorthorn	558.41
G. A. Fraser	Bonnie Doon Snowdrop	"	Ayrshire	555.42
J. D. Read	Springhurst Sybil Nerine	Junior 4	Jersey	679.93
*E. J. Vagg	Rydon May Queen 2nd	"	"	648.26
Vaughan Bros.	Lynroy Pixie 2nd	"	"	619.25
G. A. Fraser	Bonnie Doon Honey	"	Ayrshire	596.72
R. M. Chirnside	Mornmoot Fancy Starbright	"	Jersey	582.38
R. M. Chirnside	Mornmoot Northwood Madeira 4th	"	"	548.86
N. C. De La Rue	Lucerne Vale Master's Queen 2nd	Senior 3	Jersey	616.75
F. W. Clarke	Mer Vue Joy	"	"	595.07
R. M. Chirnside	Mornmoot Princess Madeira 2nd	"	"	570.35
R. M. Chirnside	Mornmoot Princess Madeira 5th	"	"	554.87
S. C. Handley	Barrowby Rosalind	"	"	544.75
F. A. Williams	Bamawm Princess	"	"	527.00
G. A. Fraser	Bonnie Doon Beth	Junior 3	Ayrshire	684.30
S. C. Handley	Barrowby Rose Fancy	"	Jersey	510.90
Department of Agriculture	Victoria Belfrey	"	Friesian	506.55
R. M. Chirnside	Mornmoot Starbright	"	Jersey	500.94
N. H. Enders	The Wattles Silvermine 2nd	"	"	452.86
H. McD. Hutchison	Eulomo Duchess	"	"	443.27
J. E. Handbury and Sons	Tooravale Princess 18th	Senior 2	Jersey	503.39
N. H. Enders	The Wattles Petal	"	"	480.16
P. J. Maloney	Belgonia Design's Eileen	"	"	477.21
F. Austin	Avalon Starbright's Beauty	"	"	453.31
*Salesian College	Rupertswood Bessy	"	Friesian	443.97
*J. K. Van Brummelen	Bolero Venus Dawn	"	"	435.20
F. W. Clarke	Mer Vue Sister	Junior 2	Jersey	469.13
M. A. Nicholas	Brampton Champion Girl (imp.)	"	"	456.63
R. M. Chirnside	Mornmoot Princess Madeira 7th	"	"	451.93
A. and W. Shearman	Darnum Park Starbright	"	"	441.17
A. E. T. Payne	Yarraview Royal	"	Guernsey	431.42
O. Ronalds	Somerville Babs 20th	"	Jersey	426.98

* Thrice a day milking.

Rochester Area, of the Waranga–Mallee Irrigation System, held a prominent position in the Rochester District Herd Test Association. Now, under the control of Mr. Carl Macauley, this herd has reached a high level of breed quality and productivity, the first feature being supported by one highly commended and three commended awards from the Jersey Classification Board; and the latter, by the consistent high yields of the herd under the Standard Test. The herd is machine milked and rationally fed.

Long-distance Producer.

The most famous cow of the "Taranah" herd, is "Fairy of Taranah." Her twelve-year average of 8,047 lb. milk and 484 lb. butter-fat, has never been exceeded in this State. "Fairy" possesses those great dairy characters of fecundity, longevity, sound conformation, good health and constitution. She recently dropped her thirteenth calf, at the age of fifteen years. During her twelve test periods, she yielded 96,566 lb. of 6 per cent. milk, her total butter-fat being 5,809 lb. A feature of her test records is her high average test. "Fairy" is by "Lily 6th's Son of Melrose," from whom she appears to have inherited the high test character, for several of his daughters exceeded the 6 per cent. butter-fat level.

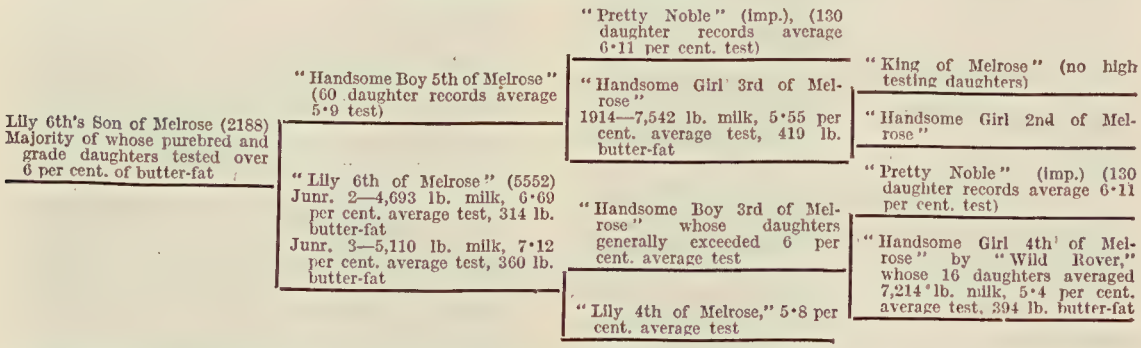
A glance at the short pedigree of "Lily 6th's Son" indicates that he received the high test character from both of his parents. His sire "Handsome Boy 5th of Melrose," was a son of the imported bull "Pretty Noble," whose 130 daughter records averaged 6.11 per cent. Both "Handsome Boy 5th" and "Handsome Boy 3rd," inhereted the high test character from him, and like him, they passed this character on to their progeny. This is evident from the remarkable number of their daughters that exceeded the 6 per cent. level of butter-fat.

It will be seen that neither "King of Melrose," the sire of "Handsome Girl 3rd," nor "Wild Rover," the sire of "Handsome Girl 4th," carried the high test character in a marked degree. Sixteen records from the daughters of the latter bull averaged 5.46 per cent.; while the daughters of the former bull tested a shade higher. It is thus reasonable to assume, that the high test character came through "Pretty Noble's" sons, for a great majority of their paternal half-sisters also possessed it.

A comparison of the yields of the mates and daughters of "Pretty Noble," shown on page 423, reveals this feature very definitely. It is apparent that "Pretty Noble" barely held the milk yield of his mates, but that he increased the test of his daughters by nearly 1 per cent. It may be claimed that a similar inheritance was passed on to his sons. This is abundantly evident in the tests of his son's daughters. "Fairy of Taranah," then, may be said to have received the high test character from "Pretty Noble," through her sire and her dam. It is interesting in passing to note that she was a heifer's calf, so also was her sire—both were great individuals—yet there are breeders who still believe that the progeny of heifers should not be retained for breeding purposes.

"Nectar of Taranah," the dam of "Fairy," died as a result of an accident. Mr. Macauley describes her as being one of the best heifers ever bred by him. "Flower of Taranah," her half-sister, by "Lily 6th's Son," yielded 422 lb. butter-fat as a junior two-year-old. This was the second highest two-year-old yield of that

Short pedigree of Lily 6th's Son of Melrose, sire of Fairy of Taranah. (One of the famous "long distance" cows in Victoria.)



Note.—"Lily 6th's Son of Melrose" evidently received the high test character from both parents. His sire being a son of the "high test" bull "Pretty Noble" (imp.), while his dam's sire was also a son of the same bull.

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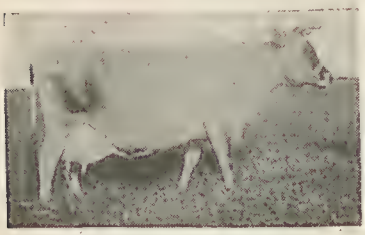
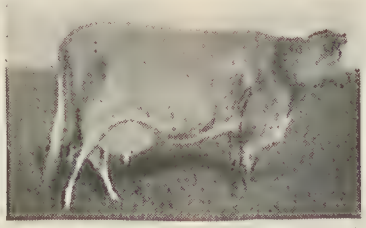
(Blush is still in the herd at 19 years of age.)



"Fairy of Taranah" (Jersey).
(Born 17.8.23.)

Year of Test.	Milk.	Average Test.	Butter-fat.
	lb.	%	lb.
1925 ..	5,598	6·28	351
1926 ..	6,957	6·39	445
1927 ..	7,850	5·83	457
1928 ..	8,354	5·80	484
1929 ..	7,973	6·08	485
1930 ..	8,096	5·59	453
1931 ..	7,913	5·99	474
1932 ..	9,186	6·07	558
1933 ..	9,477	5·91	560
1934 ..	9,449	5·91	558
1935 ..	8,250	6·00	495
1937 ..	7,463	6·35	489
12 Years Production	96,566	..	5,809
Average Yield	8,047	6·0	484



"Willow Park Blush" (Dairy Shorthorn).
(Born 19.9.19.)

Year of Test.	Milk.	Average Test.	Butter-fat.
	lb.	%	lb.
1921 ..	8,144	3·93	320
1922 ..	8,915	4·12	368
1923 ..	12,114	3·95	478
1924 ..	12,631	3·91	494
1925 ..	13,826	4·08	565
1927 ..	12,597	4·09	515
1928 ..	10,320	3·85	398
1929 ..	10,424	3·99	416
1930 ..	12,392	4·01	497
1931 ..	13,685	3·78	517
1932 ..	12,530	3·87	484
1933 ..	9,203	3·67	337
12 Years Production	136,781	..	5,389
Average Yield	11,399	3·9	449

"Miss Guy of Tarnpirr" (Jersey).
(Born 6.3.20.)

Year of Test.	Milk.	Average Test.	Butter-fat.
	lb.	%	lb.
1922 ..	7,422	6·08	452
1923 ..	8,269	5 90	488
1924 ..	8,515	5·96	508
1925 ..	9,468	5·95	564
1926 ..	9,554	6·32	604
1927 ..	11,091	5·69	631
1928 ..	8,946	5·84	523
1929 ..	9,291	5·92	550
1930 ..	9,202	5·83	536
1931 ..	9,468	5·78	547
1932 ..	7,689	6·07	467
.. ..	..	..	..
11 Years Production	98,915	..	5,870
Average Yield	8,992	5·93	534

year. The dam of "Nectar" and "Flower" was "Honeysuckle of Springhurst," while "Melody," the sire of "Nectar," was from "Rose of Springhurst." A daughter of this cow—"Rosebud of Taranah," produced 426 lb. butter-fat as a senior two-year-old and followed with a 528-lb. butter-fat yield as a junior four-year-old.

Four of "Fairy's" twelve calves were males. Of the heifers, "T. Fancy" produced up to 453 lb. butter-fat. "T. Fair Lily," a double cross by "Lily 6th's Son of Melrose," yielded 376 lb. as a junior two-year-old. "T. Fair Lady" has a five-year average of 341 lb. butter-fat, her best record being 400 lb. Another daughter, "T. Floss," yielded up to 530 lb. butter-fat, while "T. Flora" had a 424-lb. junior three-year-old record. "Fairy of Taranah" was later purchased by Mr. J. J. Desmond of Macroom stud, where some of her best yields were made.

Even if all "Fairy's" daughters were full sisters, it would be too much to expect that all would exhibit an even level of excellence. When there have been a number of sires used, one might expect great variation. Notwithstanding this fact, it is surprising to find that her daughters have excellent yields, while one of her descendants has been ranked in the Jersey Classification Scheme. Despite the production of 4¼ tons milk under test, "Fairy's" udder has remained particularly sound. Sons and daughters of this class of cow are needed on hundreds of farms in Victoria; on stud farms as well as dairy farms.

Strathbow Jerseys.

In 1920, Mr. F. Raggatt, of Casterton, entered his small jersey herd in the Standard Herd Test. Subsequently, he moved to Euroa and then to Tongala where, for the past ten years, the Strathbow Jersey stud has been located. The history of this stud has been largely that of two outstanding animals. It is necessary to look behind the herd which came into the test in 1920, for out of the material of which it was

composed, there came the famous full brother and sister "Golden Mac" and "Goldie of Strathbow".

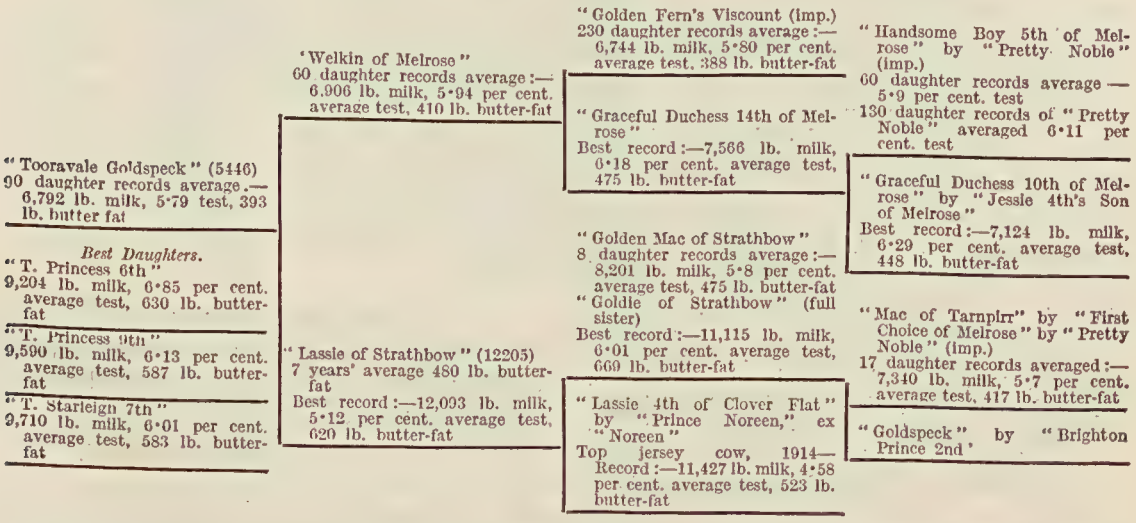
From "Goldie," who has a high yield of 11,115 lb. milk testing 6·01 per cent. and 669 lb. butter-fat, and an average butter-fat yield of 509 lb. for a seven-year period, there has been bred most of the members of the present herd at Strathbow; while from the full brother, "Golden Mac of Strathbow" were bred such famous cows as "Princess 2nd of Strathbow" (six years average 504 lb. butter-fat), her top record being 11,053 lb. of 5·93 per cent. milk, and 665 lb. butter-fat; also "Lassie of Strathbow" whose seven years average yield of 480 lb. butter-fat, 12,093 lb. of milk, and 620 lb. butter-fat—on her top yield—show her to be a remarkable cow also.

It is worth while trying to discover whence came this rich inheritance for consistent high yielding ability. When Mr. Raggatt began to build up his herd, he purchased some cows of the Clover Flat stud, which in turn had been largely bred off stock from Banyule, one of the pioneer testing herds of the State. Later, when he purchased "Mac of Tarnpirr", he was no more fortunate than he deserved to be for he sought to secure a "blend" of the then prominent test herds of Tarnpirr and Melrose. At that time, Tarnpirr was using "First Choice of Melrose" (where 61 daughter records averaged 7,340 lb. milk, 5·7 per cent. and 417 lb. butter-fat), who was a son of "Carrie 5th of Melrose" an over 6 per cent. testing cow, and "Pretty Noble" (Imp.)—(130 records of this bull's daughters averaged 6·11 per cent.).

One of "First Choice's" early daughters was "Lady Choice of Tarnpirr". Her yields of 8,007 lb. milk 6·17 per cent. and 493 lb. butter-fat, broke the heifer record in 1919. This record was held until 1922, when "Agnes 2nd of Warenda," a daughter of her sire's full brother, exceeded it with a yield of 8,307 lb. of 6.35 test milk and 527 lb. butter-fat. It was one of his sons "Mac of Tarnpirr" that Mr. Raggatt purchased, and who subsequently sired "Goldie," the mother cow of the present herd, and "Golden Mac of Strathbow". The latter bull sired "Princess 2nd," "Lassie," "Lassie 2nd," "Silvermine" and "Twilight of Strathbow".

In 1923, Mr. J. Handbury, of Tooravale, purchased several cows including "Princess 2nd" and "Lassie," who had a far reaching influence on the herd. In passing, it is interesting to note that the dams of these cows were daughters of old "Prince Noreen" ex "Noreen" (11,427 lb. milk and 523 lb. butter-fat in 1914), a record that placed her in the leading position of the breed for that year. Although the daughters of "Golden Mac of Strathbow" performed so meritoriously at Tooravale, the greatest value came to the stud through a son of "Lassie of Strathbow" (12,205). When "Welkin of Melrose" was mated to "Lassie," the issue was "Tooravale Goldspeck," and his influence in the herd has been considerable,

Pedigree and production records of the ancestors of "Tooravale Goldspeck".



Note.—Three of the grandparents of "Tooravale Goldspeck" carried high test and medium yield. "Lassie of Strathbow" carried high milk and average test. Some of "Goldspeck's" daughters carried both characters.

particularly when mated to progeny of his dam's half-sister, "Princess 2nd of Strathbow". The records of three of his daughters are given in this report.

A short pedigree of "T. Goldspeck" is interesting because it shows, even if it were not the result of design, that a number of remarkable individuals have been concentrated in it, and the best proof of his success, is the high average yield and good individuality of so many of his daughters. It will be seen that "Welkin of Melrose" was the result of mating the imported bull "Golden Fern's Viscount" with "Duchess 14th of Melrose" a grand-daughter of his famous half-brother. On the other hand his dam "Lassie of Strathbow" was bred by mating a grand-daughter of "Prince Noreen" and "Golden Mac of Strathbow" descendant of "Pretty Noble". "T. Goldspeck" ended his long and useful career in a district grade herd, where he sired many fine dairy cows.

The present Strathbow herd remains small and select, because the owner farms a small irrigation block of some 30 acres. At present, there are nine descendants of old "Goldie" in the herd at Tongala, "Goldie 2nd," "5th," "7th," "10th" and "11th" are all direct daughters of the old cow. "Goldie 2nd" was injured in the udder as a junior two-year-old, and has been unable to truly express herself as a producer. Her daughter "Goldie 4th" by "Comedian of Ballara," a son of the long distance champion producer of the State, exceeded 2 lb. butter-fat daily prior to her sale as a three-year-old; while "Goldie 9th" by "Mollern of Banyule" has yielded up to 414 lb. butter-fat on her third calf.

"Goldie of Strathbow."

The outstanding daughter of old "Goldie" is "Goldie 5th," she is by "Studleigh Noble" ex

Four outstanding descendants of "Goldie of Strathbow"; 1, "Goldie 8th"; 2, "Goldie 9th"; 3, "Goldie 5th"; 4, "Goldie 10th".

"Vanilla 7th of Melrose" a daughter of "Pretty Noble" (imp.). Her record to date for a five-year period is higher than that of her illustrious dam. She has also exceeded the 600 lb. butter-fat level. A 320 lb. butter-fat junior two-year-old record goes to her daughter "Goldie 12th," while a half-sister "Goldie 16th" has recently completed her maiden record as a junior two-year-old with 290 lb. butter-fat. "Goldie 7th" by "Banyule Fusilage" was sold to a breeder at Euroa, where she was champion at the local Show and was also the leading producer in the herd. "Goldie 10th," also by "Mollern" has a 425 lb. butter-fat record as a three-year-old, while old "Goldie's" youngest daughter by "Duke of the Lake" (imp.) has a 320 lb. junior two-year-old yield.

The story of the Strathbow herd during the past twenty years has been a constructive one. Not only have good yields been registered in the home herd, but Strathbow cows have also done well in other herds. Mr. Raggatt points out that old "Goldie" was fed on a higher plane of nutrition than the herd receives today. For the most part, the cows now receive grazing on irrigated pasture and lucerne hay, and a small quantity of concentrates—mostly bran—at the bails. The herd is a select one and the cows are generally of good conformation and breed quality.

The Ballara Jerseys.

Mr. F. T. Trevaskis is one of the many Tongala settlers who embarked on a career of breeding pure bred jerseys. In 1920, he entered his herd in the Standard Herd Test, and during the following decade, achieved considerable success; for the Ballara Jerseys have never been out of the leading four herds of the Test from 1927 to 1931; while the herd occupied second place in 1928 against the competition of all breeds with a yield of 457 lb. butter-fat for eleven cows. Mr. Trevaskis concentrated on building up a herd from certain select animals, but, like so many others, this pioneer herd lacked the high degree of breed quality demanded by the exacting standards of the maturing mind of the breeder. The splendid performance of the herd, however, has shown that it possessed dairy aptitude of a very high order.

Of the old herd, the most famous cow was "Miss Guy of Tarnpirr". She was not a handsome cow of the breed but, despite this, there has not been a more consistent or remarkable long-distance producer among all the breeds during the past quarter century of the Standard Herd Test. Her eleven year average yield of 8,992 lb. milk, 5·93 per cent. test, and 534 lb. butter-fat, speaks for itself. Her sire "Mythic's Choice of Tarnpirr," and his sire, "First Choice of Melrose," each carried the high test character of "Pretty Noble" imp. (whose 130 daughter records averaged 6·11 per cent.), and "Carry V. of Melrose" (a 6 per cent. test cow). "Miss Guy" exhibited this high test, as did so many of her paternal half-sisters. Mr. Trevaskis says of her, that she was a poor bail feeder, but was the busiest cow in the paddock, and the most consistent milker that he has ever seen. Unfortunately, she had but three daughters, one of which died as a yearling from lucerne bloat; another was sold to an interstate buyer, while the third was destroyed following an accident. She had, however, given evidence of following her illustrious dam for she yielded 524 lb. butter-fat on her third calf. Most of the sons of "Miss Guy" were sold to owners of grade-herds, where no satisfactory data of the results can be obtained. If this remarkable cow possessed a high degree of purity for the characters of longevity and for high average yield, it has been lost to the breed. That she was one of the notable exceptions in these characters among all breeds, is abundantly evident from her remarkable performance, which included the winning of the *Weekly Times* Test at the Royal Show in 1924.

"Model 3rd of Ballara," who averaged 400 lb. butter-fat for three test periods.

Mr. Trevaskis is now concentrating on developing a herd from the full-sisters "Model" and "Model 2nd of Ballara". Their sire was the successful bull "Werribee Madeira Cream's Masterpiece," and their dam "Joybell 2nd of Ballara". The oldest of these daughters, "Model of Ballara" is a fine cow, she is nice to look at, and a good producer, as is shown by her five year average yield of 536 lb. butter-fat, with a peak year of 619 lb. She was placed third in the *Weekly Times* Test at the 1928 Royal Show.

"Model" has four daughters—the first two, "Model 3rd," and "Model 4th," are by her own sire. The latter, as a junior two-year-old yielded 279 lb., but this low yield was brought about by sickness; while the former had an average yield of 400 lb. butter-fat for three test periods. "Model 6th" and "Model 11th," are by the line-bred bull "Brucevale Lord Fancy Madeira". The former has performed well to average 439 lb. butter-fat for her first five tests, having once exceeded 500 lb. "Model 11th" only recently has begun her test career. In the third generation "Model 5th" ex "Model 3rd," has a junior two-year-old effort of 352 lb. butter-fat, a yield that suggests a mature cow of at least 450 lb. butter-fat.

"Model 2nd of Ballara," recalved five times in about four years, and produced 1,895 lb. butter-fat. Her best record is 9,932 lb. milk and 483 lb. butter-fat, with 20 lb. milk on the last test day. She would, therefore, produce over 500 lb. of actual butter-fat in that lactation.

Among the outstanding animals bred at Ballara, and tested in other herds, are "Ballara Bonnie" whose total yield was 53,868 lb. milk and 3,536 lb. butter-fat at Mr. F. A. Williams' Bamawm stud. This yield stamps her as being one of the really great cows at present undergoing test. An equally distinguished animal is the bull "Ballara Lassie's Masterpiece," whose dam "Ballara Lassie 2nd" averaged 461 lb. butter-fat for six years, her best effort being 561 lb. This bull has given remarkable results in Mr. J. D. Pierce's herd at Rochester. His daughters show an increase of 60 lb. butter-fat over their 470 lb. butter-fat dams. His Equal Parent Index would be 11,192 lb. milk, 5.4 per cent. test and 604 lb. butter-fat.

Great individuals like "Miss Guy," "Model," "Bonnie" and "Lassie's Masterpiece," appear in our herds from time to time; some, like "Miss Guy" may be a champion producer, despite their lack of conformation; while others, like "Model," "Bonnie" and "Lassie's Masterpiece" may possess both good conformation and ability to produce. Of the many giving advice to breeders and farmers alike, there appears to be none sounder than he who advises serious concentration in the selection of those animals which combine long life, regular calvings, rational economic yields, and sound conformation. A steady adherence to this ideal is more likely to bring many such individuals into the herd than any other. To develop such a herd is a rare achievement.

Test Figures Questioned.

The reliability of Standard Herd Test figures has been questioned at different times on the grounds that the owner may, if he cared to take the trouble, find out when the tester was likely to be along and prepare his herd accordingly. It was decided, therefore, to introduce a system of check tests whereby the tester made his usual visit but, without warning, announced that he was continuing the test during the next 24 hours. If a herd had been prepared, it would be reflected in the subsequent 24-hour period. The figures in the accompanying table, which is a comparison of check tests taken on some leading Standard Herd Test Farms, show that the variation between the average yields of milk and butter-fat for each 24-hour period generally is in the second decimal place and indicate the reliability of Standard Herd Test work.

INFORMATIVE DATA ON STANDARD HERD TEST WORK.—COMPARISON OF CHECK TESTS.—THE SECOND 24 HOURS IS ENTIRELY CONTROLLED BY THE HERD TEST OFFICER.

Owner.	1st 24 Hours.			2nd 24 Hours.		Difference.	
	Number of Cows.	Average Milk per Cow.	Average Butter-fat per Cow.	Average Milk per Cow.	Average Butter-fat per Cow.	Milk.	Butter-fat.
		lb.	lb.	lb.	lb.		
R. M. Chirnside	27	37·8	2·00	37·6	2·01	− 0·2	+ 0·01
A. E. T. Payne	17	36·0	1·66	37·3	1·72	+ 1·3	+ 0·06
T. M. Noble and Son	12	27·08	1·57	26·58	1·58	− 0·5	+ 0·01
E. J. Vagg	15	24·9	1·29	25·2	1·44	+ 0·3	+ 0·05
R. G. Gay and Son	12	29·4	1·55	30·2	1·64	+ 0·8	+ 0·19
R. M. Chirnside	14	27·7	1·77	27·8	1·75	+ 0·1	− 0·02
T. M. Noble and Son	11	21·2	1·25	20·7	1·26	− 0·5	+ 0·01
J. D. Read	31	30·0	1·74	29·5	1·66	− 0·5	− 0·08
(J. E. Handbury and Sons) No. 1 Farm	18	26·5	1·57	27·0	1·63	+ 0·5	+ 0·06
N. H. Enders	16	25·6	1·66	26·0	1·72	+ 0·4	+ 0·06
O. Ronalds	10	38·9	1·84	38·8	1·95	− 0·1	+ 0·11
P. J. Maloney	12	35·1	1·84	34·9	1·86	− 0·2	+ 0·2

Herd Averages, 1937-38

Owner.	Breed.	Junior 2-year-old.		Senior 2-year-old.		Junior 3-year-old.		Senior 3-year-old.		Junior 4-year-old.		Senior 4-year-old.		Mature.		Total Herd.	Average without Allowances. butter-fat.	Average with Allowances. butter-fat.
		No.	Average. butter-fat.	No.	Average. butter-fat.	No.	Average. butter-fat.	No.	Average. butter-fat.	No.	Average. butter-fat.	No.	Average. butter-fat.	No.	Average. butter-fat.	No.	lb.	lb.
			lb.		lb.		lb.		lb.		lb.		lb.		lb.			
HERDS OF 15 TO 24 COWS.																		
1. Chirnside, R. M.	Jersey ..	10	383·88	1	353·14	1	500·94	2	562·61	3	540·92	2	649·54	5	634·64	24	496·38	570·04
2. Clarke, F. W. ..	,, ..	4	412·57	..	..	..	..	2	556·88	1	511·50	2	465·66	6	474·09	15	470·09	515·43
3. Read, J. D. ..	,, ..	8	330·64	5	398·75	1	442·12	1	478·94	2	584·22	2	550·62	3	513·72	22	425·94	507·63
4. Handbury, J. E. and Sons, No. 1 Farm	,, ..	3	344·36	4	427·77	..	..	5	427·98	1	372·78	3	431·25	4	566·38	20	440·81	501·31
5. Fraser, G. A. ..	Ayrshire	5	285·64	..	..	1	684·30	..	..	2	467·15	2	454·63	6	489·37	16	430·77	481·27
6. Maloney, P. J...	Jersey ..	6	337·92	5	369·01	3	388·85	..	..	1	469·31	3	491·11	6	476·00	24	409·91	479·41
7. Hore, E. ..	,, ..	9	339·90	3	336·30	2	392·63	3	455·60	2	470·55	1	453·41	4	481·25	24	397·48	477·82
8. Payne, A. E. T.	Guernsey	3	396·14	..	..	3	372·35	2	453·70	1	325·70	4	480·09	4	426·27	17	421·41	471·82
9 Department of Agriculture	Friesian..	4	293·15	..	..	2	470·97	2	392·88	2	446·79	..	..	5	459·20	15	405·99	461·99
10 Hurrey, W. H.	Jersey ..	9	309·04	3	387·23	6	403·00	1	362·40	1	446·04	2	479·24	2	423·29	24	373·94	461·77
11. Salesian College	Friesian..	2	284·75	3	340·14	1	381·01	1	388·20	1	425·61	..	..	8	482·24	16	415·17	460·67
12. Vagg, E. J. ..	Jersey ..	5	290·32	2	361·27	..	..	2	369·68	1	648·26	..	..	6	457·55	16	394·19	454·69
13. Austin, F. ..	,, ..	5	352·98	4	383·62	1	395·51	1	332·19	2	337·60	1	529·21	3	390·02	17	376·56	450·50
14. Norman, J. G...	,, ..	7	293·03	1	426·87	..	..	1	389·69	1	469·56	3	431·26	3	479·83	16	379·41	448·66
15. Nicholas, M. A.	,, ..	10	330·52	1	310·07	2	330·32	..	..	1	302·01	..	..	9	407·91	23	358·66	427·87
16. Broad, A. A., Estate of late	,, ..	5	273·97	1	304·84	2	382·62	..	..	2	409·30	..	..	6	438·69	16	368·17	427·42
17. Dookie Agricultural College	Ayrshire	4	308·98	3	332·72	..	..	..	..	1	265·31	1	389·40	7	427·99	16	367·80	420·80
18. Shearman, A. & W.	Jersey ..	7	292·73	1	342·72	1	414·37	1	382·43	..	..	1	330·52	4	405·38	15	342·71	416·04
19. Gay, R. G. & Son	,, ..	3	251·11	..	..	..	..	3	334·37	1	375·92	..	..	9	427·04	16	373·48	410·23
20. Harvey, T. ..	,, ..	..	..	3	368·69	2	280·72	2	415·46	2	393·81	2	377·89	9	363·87	20	365·83	403·33
21. Walker, C. S. ..	,, ..	5	268·14	1	302·22	1	360·78	2	345·29	1	356·11	2	308·04	4	396·36	16	328·32	390·07
22. Huffer, J. A. ..	,, ..	5	218·23	..	..	3	355·98	1	320·93	3	317·73	..	..	7	364·92	19	315·14	370·82
23. Richardson, W. S.	,, ..	3	228·46	2	246·90	1	327·17	1	316·08	1	384·30	2	314·78	8	364·11	18	319·40	364·23
24. Maher, R. H. ..	,, ..	7	198·64	1	295·71	1	346·23	2	272·54	1	310·58	1	356·26	8	334·69	24	283·71	350·71
HERDS OF OVER 25 COWS.																		
1. Atkinson, W. K.	Dairy Shorthorn	9	268·83	5	303·21	5	333·81	3	376·31	4	374·05	5	450·93	18	423·64	49	369·59	435·98
2. McNabb, G. A. and Son	Jersey ..	14	287·05	4	344·49	5	353·89	6	348·56	1	374·33	3	414·24	8	413·05	41	345·83	430·54
3. Lyon, C. G. ..	,, ..	10	268·21	5	326·36	8	339·77	4	390·68	6	390·25	1	442·98	9	409·29	43	350·30	430·34
4. Ballarat Orphanage	,, ..	4	265·98	1	269·20	2	323·05	5	337·39	1	364·99	5	393·28	12	408·18	30	363·19	410·02
5. Smith Bros. ..	,, ..	9	281·19	..	..	7	319·16	..	..	3	380·90	..	..	19	381·59	38	346·26	404·07
6. Department of Agriculture	Red Poll	11	291·44	3	290·78	10	298·93	3	299·76	3	374·45	4	379·69	21	347·95	55	325·74	396·65
7. Coughlin, C. ..	Jersey ..	7	276·25	3	304·27	2	299·78	2	289·05	3	298·91	6	344·75	7	273·62	30	296·82	359·66
HERDS OF 10 TO 14 COWS.																		
1. Enders, N. H. ..	Jersey ..	3	310·77	3	402·27	1	452·86	1	479·50	..	..	1	523·68	3	552·55	12	437·74	506·07
2. Noble, T. M. and Sons	,, ..	1	351·90	1	352·17	..	..	1	420·68	1	481·35	..	..	8	483·04	12	455·87	482·53
3. Vaughan Bros...	,, ..	5	370·56	1	268·15	..	..	..	..	1	619·25	3	472·65	4	418·14	14	416·48	473·62
4. Powell, T. S. ..	,, ..	..	..	1	370·63	3	422·86	2	417·72	1	450·11	2	425·80	3	439·93	12	424·68	469·68
5. Fairchild and Clutterbuck	,, ..	1	281·33	1	364·47	2	370·63	1	391·51	1	518·72	..	..	4	409·23	10	393·42	441·42
6 Desmond, J. J.	,, ..	2	312·20	2	337·84	..	..	1	450·25	2	389·36	1	302·76	6	418·05	14	381·43	424·29
7. Nancarrow Bros.	,, ..	2	268·86	3	332·30	1	317·91	1	356·36	..	..	..	..	3	435·63	10	351·58	419·58
8. Meaklim Bros...	Dairy Shorthorn	..	..	..	..	1	388·05	1	312·34	2	420·87	2	366·93	5	414·68	11	395·40	419·03
9. Wade, W. J. ..	Jersey ..	4	277·01	2	338·21	2	368·98	..	..	1	495·06	..	..	2	341·20	11	336·35	416·35
10. Trewin, J. V. ..	,, ..	4	273·84	2	352·89	1	353·52	..	..	..	..	1	439·55	2	391·52	10	337·72	415·72
11. Hercus, T. B. ..	,, ..	2	248·10	3	302·30	1	313·54	1	167·70	..	..	1	339·66	3	447·40	11	324·20	387·84
12. Tomasetti, B. G.	Ayrshire	3	272·83	..	..	2	337·48	2	334·79	..	..	..	..	7	373·84	14	341·42	387·14
13. Lyon, W. H. ..	Jersey ..	1	274·34	..	..	2	298·08	1	373·01	1	324·13	2	289·64	5	409·42	12	349·50	384·50
14. Thomas & Taylor	Ayrshire	4	232·16	1	283·88	..	..	..	..	..	..	3	400·96	4	376·25	12	326·70	380·03
15. King, W. H. ..	Jersey ..	4	255·44	..	..	..	..	1	313·66	..	..	..	..	8	358·41	13	323·28	364·82
16 Coulthard, J. L. and Sons	,, ..	..	..	3	275·20	..	..	2	333·27	2	419·60	..	..	4	295·39	11	319·36	364·81
17. Box, Estate late Dr. J.	,, ..	2	261·73	2	256·35	1	297·80	1	312·14	1	363·13	1	252·19	5	345·69	13	306·91	356·14
18. Alston, N. B. and Sons	,, ..	5	235·08	1	262·49	2	307·69	..	..	4	303·24	..	..	1	314·72	13	275·46	353·92
19. Pattison, F. ..	Ayrshire	2	277·16	..	..	..	..	..	..	1	321·38	2	294·32	5	346·26	10	319·56	351·56

Tobacco Investigations—1937-38

By W. J. B. McDonald, B.Agr Sc., Senior Plant Investigation Officer

INFORMATION and data relating to agricultural problems reach the Department of Agriculture from a great number of sources. In its investigations into tobacco, one of the greatest sources of information is provided by contact between growers themselves and this Department's officers. It is now fairly well recognized that it is the desire of this Department that one of its tobacco officers should visit the property of each tobacco grower at least once during each major phase of the tobacco crop's history. North-eastern growers are well served in this respect by Mr. C. Vaughan, and those growers in the Goulburn and Murray Valleys by Mr. W. Prowd.

A healthy crop of tobacco seedlings.

Choice of Seed.

From observations made and discussions with growers during the past season, Mr. Vaughan has drawn attention to the necessity for particular care in the choice of tobacco seed. Generally speaking, during this season curing has been difficult, proven good growers having met great difficulty in obtaining and holding a satisfactory colour in the barn. In spite of this, other growers not more skilled than their less fortunate neighbors have had very little trouble in obtaining satisfactorily cured leaf. This variation in cured result has been greatly in evidence among those crops planted to Hickory Pryor, and after a careful consideration of soil characters, fertilizing practice and general crop cultivation, Mr. Vaughan suggests that the most likely cause of the success obtained by certain growers is the particular strain of seed they were growing. In almost every case these good crops could be traced back to about three particular lines of seed.

In a district like the North-east, where tobacco has been grown continuously for a great many years, it is reasonable to assume that some growers have been able to isolate a strain of a particular variety specially well adapted to that locality. Last year's experience seems to indicate that such is the case, and this has been supported by evidence from the experimental area at Myrtleford, where seedlings from four different lines of Hickory Pryor seed were grown under comparable conditions. In this instance a plot from Mr. Spinks' seed yielded 276 lb. of green leaf, from Mr. Savage's seed 250 lb., from the Department's seed 207 lb., and from imported American seed 161 lb., and when cured, the leaf from the higher yielding plots was much the better product. [Each plot was 1/20th acre.] A similar trial conducted with Dungowan showed that a plot from the Department's selection gave 328 lb. of green leaf, from Mr. Olivero's seed 324 lb., from Mr. Farrington's seed 300 lb., from Mr. Milne's seed 284 lb., and from Mr. Naismith's seed Gunbower, 268 lb.

Varieties.

Victoria as a whole is restricted by liability to disease to three main varieties, namely, Hickory Pryor, Dungowan, and Conqueror. Other varieties would probably yield better quality tobacco, but the risk of total loss from blue mould entailed in growing lighter varieties in the main growing areas still is too great to be considered seriously. This disease problem is the dominant factor influencing varietal recommendations in the North-eastern district.

The *Dungowan* variety is the Jekyll and Hyde of Victorian leaf types. Under some circumstances, it produces a light-bodied bright leaf, under other circumstances it produces a heavy green leaf which is extremely difficult to handle, but it probably is the variety most tolerant to mould, although experience in the last three years would suggest that it is very subject to the condition known as dwarfing or stunting. Of fifteen varieties tested at Myrtleford last year, it was exceeded in yield only by White Stem Willow leaf, a variety new to this State and very similar in general type to Dungowan.

It is suggested that in the North-eastern district, Dungowan could be planted in the lightest sandy areas, especially where these areas are located in corners or bends of the river or where liability to mould damage is known to be fairly pronounced. It is considered, however, that on high ground or ground inclined to be strong or heavy, Dungowan should be rigidly avoided, and under no conditions should it be planted late in the season. In the Pomonal district, Dungowan is recommended in preference to all varieties other than that known locally as Oronoco Pride, and about which, as yet, little is known. At Nathalia and Gunbower, except in perhaps one instance, Dungowan should have very little appeal.

Hickory Pryor probably is the most useful variety we have, although, as previously pointed out, there is room for a great deal of discrimination in selecting particular strains of this variety. It has become established definitely as the main variety suited to the Nathalia and Gunbower districts and probably constitutes more than 90 per cent. of the produce of those areas.

On high ground or strong ground in the north-east and in practically all areas where liability to mould is not excessive, this variety should hold pride of place. In very infertile soils, especially where irrigation is not available, it produces a very narrow "stringy" type of leaf and should be avoided. If subjected to harsh, dry conditions, or general neglect during its growing period, it gives evidence of the same characteristic.

Conqueror is very similar to Hickory Pryor in general character, but is considered to be somewhat heavier and more inclined towards the production of a true mahogany type of leaf. Some growers however have obtained very good results from this tobacco. Under circumstances where Hickory Pryor is unduly light in yield and perhaps small in leaf size it could be replaced by Conqueror which is a useful general purpose variety.

Of numerous other varieties tested, Cash probably is the one giving greatest promise. It is regarded by Departmental officers as the best quality leaf grown last year at Nathalia and Gunbower experimental areas although it was somewhat handicapped by being cured along with slower moving types. If future evidence confirms that already obtained with respect to this variety, it may quite easily replace Hickory Pryor in the Murray Valley areas.

A table summarizing results from the variety trials at Nathalia is included in this discussion (Table I.). The results from this centre have been presented because this particular plot was not affected seriously by any form of disease, and the figures therefore are a fairly accurate index of the relative potentiality of each variety under moderately favorable circumstances. The soil is a fine deep reddish colored sand. The plot site had grown a crop of peas between the two successive tobacco crops. The tobacco crop was irrigated approximately every ten days, and the fertilizer used was a mixture made up of 300 lb. of superphosphate, 150 lb. of dried blood, and 150 lb. of potassium sulphate per acre. Possibly better curing results would have been obtained had the green crop been rye or barley in preference to peas. Seedlings were planted during the latter end of November.

It will be noted that the percentage of cured weight to green weight is very much lower in all the Dungowan types—namely, Dungowan Selector, Golden Pryor, and Oronoco Pride. In the variety Cash, the Mahogany grades constitute an unduly high percentage because of the fact that this variety moved quickly in the barn and consequently showed a high degree of smudged bright leaf. The green and immature fraction is satisfactorily low.

Journal of Agric., Vic., Sept., 1938.

For the Eradication of Orchard and Garden Pests

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Fertilizer Trials.

It is exceedingly difficult to arrive at what may be considered safe fertilizer recommendations because of varying climatic conditions, varying soil factors, and again the influence of successive crops of tabacco on the same particular site. The following recommendations are based on experiments conducted over periods varying from two to four years, and may be subject to considerable modification as investigations proceed.

North-Eastern District.

In the North-east the optimum dressing of superphosphate appears to be in the region of 500 lb. per acre. On new ground this alone should suffice. On ground that has carried a number of crops it is suggested that 150 lb. of sulphate of potash plus at least 100 lb. of dried blood be added to the superphosphate. The fertilizer may be applied either in furrows under the site of the row or broadcast and worked in. If applied in furrows it should be well mixed with the soil prior to planting out.

Nathalia-Gunbower District.

It is recommended that on new ground, in the Nathalia-Gunbower district, 300 lb. per acre of superphosphate be applied, and that on old

Table I.—Graded Weights—Varieties—Nathalia, 1937–38.

—		Gold Leaf.	Volunteer.	Yellow Pryor.	Golden Pryor.	White Stem Orinoco.	Hickory Pryor.	Dungowan Selection (Dept. Seed).	Cash.	Conqueror.	Orinoco Pride.	Dungowan Selection (Lucke's Seed).
Green Weight	lb./Ac.	6,814	6,722	8,992	9,792	8,400	7,476	9,946	7,824	9,680	11,096	10,472
Cured Weight	lb./Ac.	1,544	1,372	1,662	1,576	1,610	1,561	1,481	1,559	1,760	1,685	1,559
Percentage Dry Weight to Green Weight ..	%	22·3	20·4	18·5	16·1	19·2	20·9	14·9	19·9	18·2	15·2	14·9
Bright Mahogany BM_1, BM_2, BM_3, IB_1 ..	lb./Ac.	188	97	322	294	181	242	312	336	324	330	401
	%	12·2	7·3	19·3	18·7	11·2	15·5	21·1	21·6	18·4	19·6	25·7
Bright Scraps IB_2, IB_x ..	lb./Ac.	30	26	47	39	48	36	66	58	30	48	50
	%	2·0	1·9	2·8	2·5	3·0	2·3	4·5	3·6	1·7	2·9	3·2
Bright Green BM/G (Saleable Leaf) ..	lb./Ac.	127	156	166	350	124	166	282	59	217	208	191
	%	8·2	11·4	10·0	22·2	7·7	10·6	19·0	3·8	12·3	12·3	12·2
First Mahogany M_1 ..	lb./Ac.	179	133	214	165	217	220	140	299	231	201	166
	%	11·6	9·7	12·9	10·4	13·4	14·1	9·4	19·2	13·1	11·9	10·6
Second Mahogany M_2, M_3	lb./Ac.	370	326	458	217	410	317	263	480	423	329	296
	%	24·0	23·8	27·5	13·8	25·4	20·3	17·7	30·7	24·0	19·5	19·0
Mahogany Green M/G (Saleable Leaf) ..	lb./Ac.	389	410	151	290	336	354	116	130	214	258	151
	%	25·2	30·0	9·8	18·4	20·9	22·7	7·8	8·3	12·1	15·3	9·7
Dark Scraps, MLG, D_x	lb./Ac.	181	132	225	108	191	138	199	182	210	191	166
	%	11·7	9·6	13·6	6·8	11·9	8·9	13·4	11·7	11·9	11·3	10·7
Green (Unsaleable Leaf)	lb./Ac.	79	88	77	113	102	88	102	15	111	122	138
	%	5·1	6·5	4·7	7·2	6·4	5·7	7·0	1·0	6·3	7·2	9·0

ground 150 lb. of sulphate of potash be added to this together with 100 lb. of dried blood on the more fertile sands or 150 lb. on the less fertile sand. If a side dressing of nitrogenous fertilizer is required to accelerate growth after planting out, it is suggested that 56 lb. of nitrate of soda should suffice for this purpose. It is important that nitrogenous dressings should be carried out carefully as an excess of nitrogen is just as damaging as too little.

Fertilizer trials at Myrtleford showing a manured row between two unmanured rows.

POMONAL DISTRICT.

At Pomonal a basal dressing of 300 lb. of superphosphate is essential. On the red or grey sands which keep moist during the summer, 150 lb. of sulphate of potash plus 150 lb. of dried blood or 450 lb. of castor meal can be added in addition. On the dry sandy areas which do not receive seepage during the summer, it is doubtful whether applications of potash or nitrogen will show any effect on yield except in a damp season.

Topping and Suckering.

The bulk of experimental evidence suggests that yield and quality of leaf are improved by proper attention to the operations of topping and suckering. This evidence has been obtained consistently over a period of four years on a sandy loam type of soil. On strong ground, it is suggested, however, that probably best results will be obtained by topping at a high level. Topping without subsequent suckering cannot be recommended.

Time of Planting.

From general field observation it is suggested that the latter half of October is the most profitable planting date in the north-east, while the other tobacco-growing districts in the State are better served by planting during the latter end of November and early December. From field observations also it would appear that the condition known as dwarfing or stunting is favored mostly by plantings during the middle of November. Information obtained up to date suggests that this condition is a disease due to a virus which probably is spread by means of actively flying insects.

Usage of Australian Tobacco.

At the last meeting of the Victorian Tobacco Growers' Association there was some discussion with regard to the amount of Australian tobacco actually used in manufacture. Table II. shows the amounts used over the last eight years. It will be noticed that a steadily increasing proportion is being consumed.

TABLE II.—USAGE OF AUSTRALIAN LEAF.

—	Imported Leaf.	Australian Leaf.	Percentage of Australia Leaf.
	lb.	lb.	%
1929–30 ..	17,983,000	1,192,000	6·2
1930–31 ..	13,327,000	3,129,000	19·0
1931–32 ..	14,076,000	2,349,000	14·3
1932–33 ..	14,103,000	2,722,000	16·2
1933–34 ..	13,718,000	3,307,000	19·4
1934–35 ..	17,768,000	3,352,000	19·6
1935–36 ..	14,662,000	3,653,000	19·9

N.B.—The weights quoted above are for stemmed leaf.

Marking Lambs

Precautions to be observed

By R. N. Wardle, B.V.Sc., Veterinary Officer.

THE question of lamb marking and of the precautions to be taken to ensure the successful carrying out of that operation is one deserving the serious consideration of all sheep-breeders. That adequate precautions are not always taken is evidenced by the large percentages of lambs so frequently lost after marking. It is the object of this article to set out a few hints that, if carried out, should reduce materially the loss of lambs from this cause.

Much of the success of sheep-farming depends on the percentage of lambs reared, and an 85 per cent. drop has much of the gilt taken off when reduced to, say, 70 per cent. after marking.

Lamb marking consists of three operations, ear-marking, castration and docking, which are performed in that order. In this article, however, it is proposed to deal only with castration and docking.

Age and Time for Marking.

Strong lambs can be safely marked any time after they are a few days old, but when dealing with numbers a good time is when the majority are about two or three weeks of age.

A period of mild weather should be chosen. Windy days are most unsuitable, especially if the wind be cold and piercing. Marking operations should never be carried out during hot weather. Even in mild weather it is best to carry out the work in the morning and early afternoon only. By finishing up early there is a better prospect of all the lambs being mothered before evening. This in itself will save many a lamb that would otherwise die.

Where the Work should be Done.

Temporary pens and yards, erected out in the paddocks where the lambs are actually living, form the ideal site. These may be constructed simply by the use of hurdles, stout stakes, and wire netting. Temporary yards for small flocks can be constructed with surprisingly little trouble, and even when dealing with large numbers it pays to mark the lambs in temporary yards, though in such cases they necessarily have to be more complicated.

The yards should be dismantled when the job is finished, and in the following season a fresh piece of ground should be selected for the site.

A plan of yards to hold about 250 ewes and their lambs is reproduced in the accompanying sketch.

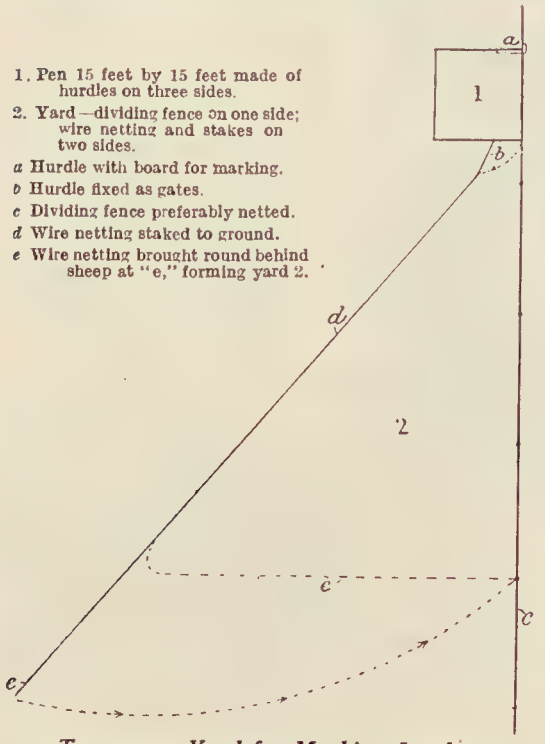
The advantages of using such a site are many and will bear much consideration. The lambs will not be hot and fatigued before or after the operations. This is important, since fatigue lowers the resistance of the animal body to climatic changes and bacterial or germ infections. Again, they will be placed on clean grass land instead of on broken up ground, soiled by manure, such as is found around old yards; consequently, the risk of contamination of the wounds is practically nil. A third advantage previously mentioned is that if the work is completed early in the afternoon, the ewes and lambs being in a paddock they know, will find each other more readily.

If, however, it is necessary to use the permanent yards some preparations are needed to make them as clean as possible. All manure and rubbish should be carted away to a safe place and the yards watered to lay the dust. The place of operation should be selected so that, if possible, the lambs may be dropped into a grass paddock and not into a yard. The posts and rails adjacent to the operating site should be cleaned up with an adze.

Wherever the operation is performed a new board such as a 6-in. flooring board should be nailed on to the top rail and used instead of the rail itself. A sheep skin or other covering is quite unnecessary and dangerous.

The board should be kept clean during the day by scrubbing it with a solution of washing soda in hot water, and a new board should be used each season.

The clothes, not only of the operator but also of the catcher, should be as clean as practicable. The lamb should be sat on the board, care being taken to treat it as gently as possible.



Temporary Yard for Marking Lambs.
Will hold 250 ewes and their lambs—scale, 1 inch equals 35 feet.

The hind legs should not be pulled too far apart, and after the operation is completed the lamb should be dropped gently on to its feet.

The Operation of Castration.

The lamb is picked up and placed on its rump on the board, each hind leg being held with its corresponding front leg, the back of the lamb resting against the chest of the holder. Care should be taken that the hind legs are not held too far apart nor should the lamb be treated roughly in any way.

The operator then grasps the tip of the scrotum or purse in his left hand, and with the knife blade completely severs the lower one-third. This method has advantages over the practice of simply slitting the purse with two incisions through which the testes are removed. The former method is simpler and quicker, and there is less likely to be any suppuration or collection of a blood clot.

As soon as the scrotum is opened, the fingers of the left hand are placed behind the testicles, and by pressure they are forced out of the purse and can be seized; then one by one the testicles are drawn out, and the cord severed.

There are many variations of the method used for severing the cord. The old method of using the teeth to grasp the testicle and drag it out has in general been superseded by the use of an instrument in the form of a pair of toothed grips, but, from a surgical point of view, this method is not the best, as very often considerable force is necessary, and the cord may break high up. Such happenings must have a bad effect on the lamb's recovery from the effects of the operation. Often the knife only is used and the cord severed by a series of scraping movements.

One of the neatest and most surgical-like ways is to use an emasculator which severs the cord and crushes the severed end. Seldom is there any haemorrhage and larger lambs are very successfully operated on by this method. In every case where an instrument is used each of the testicles should be treated separately.

The Bloodless Operation.—There is a method by which the male lamb can be castrated without making a wound in the scrotum. A pair of very strong specially constructed pincers which sever the cord inside the scrotum are used. Each cord is done separately. The jaws of the castrators or pincers are brought together over the skin of the scrotum with the cord lying in between, and the handles are squeezed to their limit and opened. The severed ends of the cord can then be felt. This operation is repeated for the second testicle. The severed organs atrophy or wither.

Some flock-owners who have had experience with this instrument state that lambs so marked thrive better than those treated by the usual open methods where there are external wounds to heal, and probably more shock. In fly-infested districts or on properties known to be infected with tetanus or other disease-producing organisms, these instruments would be invaluable.

Sterilization of Instruments.

Knives used should consist of metal wholly so that they can be effectually sterilized. The best and surest method of sterilization of instruments is by boiling in water for fifteen minutes, and all instruments other than knives

should be so treated. Continual boiling effects the cutting edge of the latter, so the practice adopted is to sharpen them, wipe clean and then soak in and rub them over with methylated spirits.

But sterilization in the first instance is of little use if, subsequently, the instruments cannot be maintained sterile. Hence, when not in actual use they should be kept in an antiseptic solution. This can be done by using a small clean and fairly flat dish (one cut out of a petrol tin will do) arranged so that it can be fastened to a post. In this receptacle some lysol preparation of a strength of one tablespoonful to one pint of water should be kept.

The instruments should be constantly dipped in this solution and when not actually in use they should be kept in the dish. The practice of placing the instruments anywhere except in an antiseptic solution is to be strongly condemned. If by any mischance an instrument should be soiled by dirt, the original process of sterilization must be carried out.

The operator should have water, soap, antiseptic, and a nail brush always convenient to use for washing his hands, and he should not attempt to assist at any other work.

Docking.

In docking the same precautions are necessary with respect to the knives used. The tail is cut off generally about the second joint. Before it is actually cut the skin should be retracted slightly towards the lamb's body by the man holding the lamb. When released it projects over the end of the bone, protecting it while healing takes place.

The pincers mentioned for the operation of bloodless castration may also be used for docking. The jaws are brought together at the required position, and as this does not completely sever the tail, it is then necessary to complete the operation by running the knife around the inside curve of the jaws of the instrument; the edges of the skin then remain together.

If the process of marking be carried out in a clean manner and the lambs placed on clean pasture after the operation, dressings are superfluous. Sticky dressings that hold dust and dirt are actually harmful.

Wound Infection.

Tetanus or lockjaw is the disease causing the greatest loss in lambs as the result of wound infection. Symptoms show in from two to fourteen days after infection and are as follow:—

The lamb becomes stiff in the legs and while it can walk it shuffles along with more or less straight legs. On handling it is found that the body also is stiff and the muscles of the back and loins are hard. Later, the lamb falls down and lies in a characteristic attitude with legs outstretched and the head drawn back. If lifted and held on its feet it is seen that the limbs remain rigid and are placed outwards from the body, the attitude simulating a trestle.

Tetanus is not a blood poisoning, but the symptoms are due to a poison affecting the nervous system. Tetanus germs form spores or seeds, and it is the spore which contaminates the wound. These spores are extremely resistant to destruction and can live in soil and manure for a great length of time.

Losses are brought about also by blood-poisoning, and there may be several different kinds of germs causing this complaint. Death generally occurs rapidly and the main point for notice is the fact that, like the tetanus infection, the germs of blood-poisoning inhabit manure, dust and soil.

Infectious arthritis.—Lameness in lambs during the first four weeks or so of their life is due to an infection causing a mild joint inflammation. If occurring before the lambs are marked, it can be accepted that the infection enters the body through the navel of the newly-born lamb, while if occurring after marking, the entry of the infection is undoubtedly through the castration and docking wounds. Lameness without location to any particular joint is often the only symptom, but in a percentage of cases certain joints—knee, hock, fetlock, stifle—may evidence some heat and stiffness. Most cases recover spontaneously, but where the symptoms are severe, the lambs refuse to move about, lie down a great deal and naturally suckle less than they should. In these cases, condition is lost and in a few instances death from starvation takes place. Treatment of the navel or marking wounds, which either have not healed or which show signs of being septic, is recommended, and there is nothing better than weak tincture of iodine for this purpose.

Preventive measures, which, of course, are all important, consist in endeavouring to lamb down the ewes on fresh clean paddocks and to mark the lambs in temporary yards in these fresh clean paddocks rather than in permanent yards which have been used for many purposes for a number of years. Particularly with stud sheep or with

small flocks, it should be possible to apply iodine to the navel of newly-born lambs, and although ordinarily, antiseptic dressings to the marking wounds are not necessary, it is advisable on those properties where arthritis occurs to use iodine on these marking wounds also.

Summary of Precautions.

1. Use fresh temporary yards each season if possible.
2. If permanent yards be used, clean them up before marking the lambs.
3. Keep the marking board clean.
4. Sterilize or disinfect hands and instruments constantly.
5. Drop the lambs on to clean pasture and finish early each day.

Some of the points that have been stressed may seem trivial, but it must be remembered that the saving of a small number of lambs each season will repay the breeder for the little extra trouble that may be taken before and during the process known as lamb-marking.

Boron in the Orchard

Victorian Tests Negative

By C. E. Cole, B.Agr.Sc., Horticultural Research Officer.

MUCH prominence has been given during the last few years, particularly in Tasmania and New Zealand, to the use of boron as a corrective for disorders of the "internal cork" type in apples and pears. It is, therefore, only natural that Victorian fruitgrowers should ask whether applications of boron would eliminate somewhat similar troubles which appear rather irregularly in their apples and pears. Now is the time for the application of fertilizers, and the information here given may help those growers who are undecided as to whether they shall use any boron or not.

Recently officers of the Department collected specimens of apples and pears which showed any resemblance to the "internal cork" of other places. These were forwarded to the Waite Institute in South Australia, where they were compared with specimens of "internal cork" from areas in which it could be cured by the application of boron. None of the types submitted was considered by the Waite Institute to be identical with the true "internal cork," as it may be called.

During the 1937–38 season, tests were made to determine whether the most common of these types, usually referred to as "pigface" or "crinkle" of apples, was due to a deficiency of boron. In the form of borax, it was applied to the soil, sprayed on to the foliage at two different times, and injected as a solid and in solution directly into the branches of a number of London Pippin apple trees. The trees were kept under observation during the season, and at picking time the fruit from treated and untreated trees or branches was examined separately. Although the incidence of the trouble was light, it appeared indiscriminately on fruit from treated and untreated units, and it was, therefore, concluded that the use of boron would not prevent its appearance. It was noticed, however, that the fruit on branches injected with a solution of borax was smaller and greener at harvest time than was the fruit on untreated branches. It was also observed that bitter pit appeared equally in treated and untreated fruit.

So far, then, there is no evidence that boron is required by Victorian fruit trees, and in view of its high price growers would be well advised to concentrate on supplying their trees with the more common plant foods.

The Potato Moth

By R. T. M. Pescott, M.Agr.Sc., Entomologist

THE Potato Moth (*Phthorimaea operculella* Zell) is an introduced pest which is present, to a more or less extent, in every potato-growing district in this State. In hot dry seasons losses from this insect may be very severe, damage of up to 60 per cent. occurring in early crops and from 25 to 40 per cent. in mid-season and late crops.

Host Plants.

In addition to potatoes, the potato moth is known to attack such crops as tobacco and tomatoes, and in addition, such weeds as nightshade, thorn apple, and henbane.

Injury.

The potato moth causes two distinct forms of injury to the potato crop—(i) to the growing plant, and (ii) to the tubers. The injury to the growing plant occurs usually early in the season, when the grubs feed in the leaves, forming small brown blotches there, and also tunnelling in the stems. Where this type of damage occurs, generally over a field while the potato plants are young, considerable injury may result to the crop through a general weakening of the plants.

Leaves and stems of potato plants affected by potato moth. [*U.S.D.A. Bull. 427.*

Tuber damage by potato moth grubs.

The injury to the tubers may occur in the field if they become exposed while growing, or if they are allowed to remain in the field for any length of time after digging. Serious infestation of the tubers may also occur after they have been stored in a shed, bin, or stack. In storage, the potato moth may continue to reproduce as long as the potatoes contain enough food to mature the grubs.

Where tubers are infested in storage, the point of infestation is usually at the eyes, where the eggs are laid. The market value of such potatoes is considerably reduced and, in addition, seriously affected tubers are not recommended for seed purposes. There are upwards of five or six broods of potato moths in one complete season.

A potato crop well moulded.

2. Prepare the soil thoroughly so that efficient cultivations and mouldings can be given later.

3. Plant deeply (at least four inches), cultivate thoroughly and give a heavy moulding so that the minimum number of tubers become exposed.

4. After digging, bag the potatoes as soon as possible. Do not cover the open mouth of the bag with potato tops, but sew the bags at once and, preferably, turn them upside-down.

5. Remove the bagged potatoes from the field as soon as possible after digging.

6. Collect and burn all potato tops after digging, preferably every day.

7. Destroy all weeds that may serve as host plants for the potato moth.

Control.

The control measures suggested for this pest may be summarized as follows:—

1. It is undesirable to plant seed infested with potato moth.

Bagged potatoes sewn at once and inverted—a good practice.

Bagged potatoes covered with potato tops—a bad practice.

Book Review

"Dairy Cattle Feeding and Management" by Henderson, Larsen, and Putney (Chapman and Hall, London, 557 p.p. 20/-).

The third edition of this useful publication has been prepared by Dr. H. O. Henderson, Professor of Dairy Husbandry at the West Virginia University. [The first and second editions were prepared by Dr. C. W. Larsen and Mr. F. S. Putney, M.S.A., late Professor of Experimental Dairy Husbandry at the Pennsylvania State College.] Written mainly as a text-book for use in agricultural colleges and secondary schools, this book brings together in a compact space the more important findings of research workers in the field of dairy husbandry. Divided into 35 lectures, it deals with all aspects of dairying from the component parts of plants and animals to an economic consideration of the industry. Feeding is the subject of several lectures and there is an informative chapter dealing with the common diseases of dairy cattle. Although written primarily for the teacher and student this book should appeal to practical dairy farmers anxious to improve their knowledge of the industry in which they are engaged.

The Flaying of Calf Skins

By J. C. Marshall, Stock Inspector

COMPLAINTS are often made of badly flayed calf-skins placed on the local market; it is estimated that perhaps 25 per cent. are blemished in some way. Many complaints have also been received from overseas buyers; these relate mainly to loss owing to the shape of the skins, and to scoring (surface cuts) and nicking marks, which may not be noticeable when the skin is removed from the carcass, but which become very evident when the skin is processed.

Particular objection has been taken to the poor quality of the small calf-skins known in the trade as "Bobby" skins, and which weigh from 4 to 8 lb. The reasons these are so defective can be found in the conditions under which so many of the carcasses are skinned.

Every year a large number of young calves are slaughtered on farms and sent to market unskinned, and some of those killed at abattoirs are sold to butchers with the jackets on. Consequently, the skinning of a carcass may not be done till several days after the calf has been slaughtered. Of course, the carcasses of a big percentage of those killed at abattoirs are intended for export and are skinned immediately. Then the skins are usually taken off well, for it is recognized that sound skins have a greater value than blemished ones.

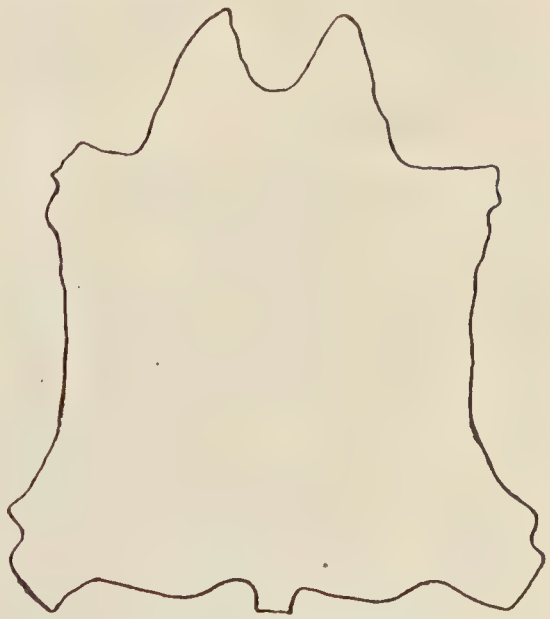


Fig. A.—A well-shaped skin.

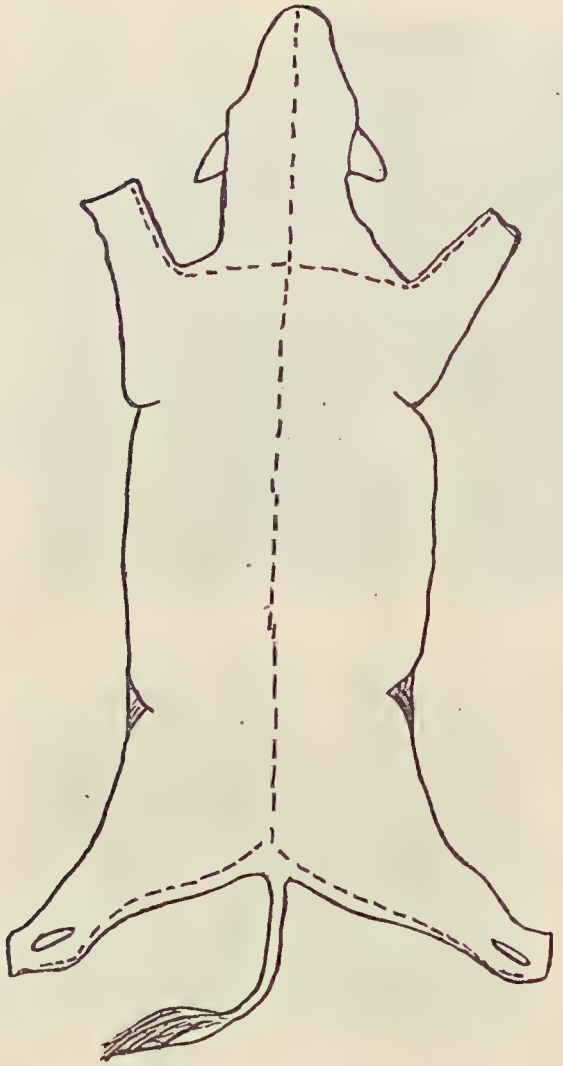


Fig. B.—Showing how a beast should be opened up.

There are several mechanical devices for removing the skin from beef and calf carcasses. The advantage of these is the prevention of scoring and nicking; an objection is that the work can be done more quickly by an expert handler of the knife. In the meat trade quickness is specially valuable, and if a mechanical device means a loss of time, even though it would give better flayed skins, there would be a prejudice against it. The initial cost and upkeep are a consideration and the possibility of its adoption might depend on the balancing of costs.

In some abattoirs, an electric motor supplies the necessary power and a cable is attached to a drum and passed under a roller fixed to the floor. The skin on the front of the calf is opened in the usual way and a clearing is made round the legs and tail; then the grip is fixed to the skin near the tail and the skin drawn down towards the floor and pulled completely off the carcass. Expert slaughtermen are required to operate the machine which does part of the work following on the knife work. It may be that occasionally a carcass will be badly torn, but this is of little concern as usually it has to be boned. In any case the value of the skin is enhanced. It is admitted by the trade generally that machine-flayed skins fetch approximately ½d. per lb. more at public auction than do skins taken off by hand. An amount of flesh sometimes adheres to the skin especially about the neck and cheeks; indeed such a result may be brought about deliberately with the object of increasing the weight of the skin.

In large establishments and where the chain system of slaughtering is practised, the mechanical flayer will no doubt sooner or later find a niche. However, at present in Victoria, especially in the metropolitan area, there are so many abattoirs that only a few are likely to install a mechanical flayer which has been described as the "tanner's dream" but the "butcher's nightmare".

Skins do not readily peel from carcasses several days after slaughter nor from carcasses that have been in cold storage. The knife has to be used a

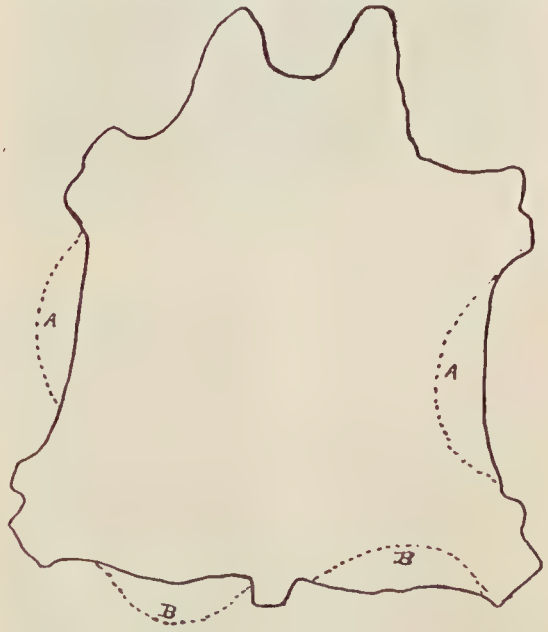


Fig. C.—If a calf is not opened up as suggested in Fig. B. the shape of the skin may be altered as shown by the dotted lines.

great deal on them and the more knife the greater the chance of damage. The skinning of such carcasses is usually done by non-experts and the result is likely to be scored and ill-shaped skins.

The defects in calf-skins can be set down mainly to the vagaries of the various branches of the meat trade. If all carcasses were completely flayed at abattoirs, then most faults could be quickly rectified; when the skinning is done on farms and on butchers' premises there will always be a percentage of faulty skins.

The main causes of badly shaped skins are:—(1) The way in which the carcass is opened out, and (2) The removal of the tail too far into the butt with the skin on, which means that a slice is lost from the most valuable portion of the skin. If only one or two inches of the skin of the tail were left attached, the pelt would have a much greater value. This is objected to in the trade, especially with bigger calves and yearlings, as it is desired to retain the skin to protect the edible tail.

Fig. A shows the outline of a skin that has been removed in such a way as to make it most valuable to the tanner. Fig. B indicates how an animal should be opened up. The knife should be run down the median line from chin to pelvis, and from hock to cod and also across the point of the sternum or breast bone as shown by the dotted lines. Fig. C is an outline of the well-shaped skin that will be obtained if the calf be opened up as suggested in Fig. B. If not opened up properly, the shape of the skin may be altered as indicated by the dotted lines—A and B.

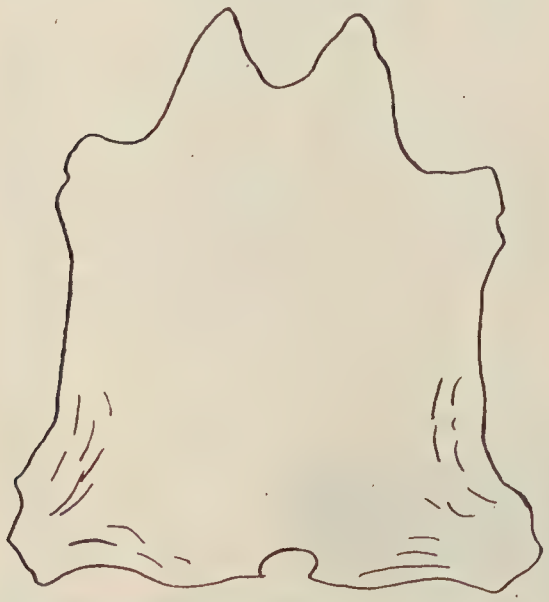


Fig. D.—Showing score marks and where tail piece has been cut.

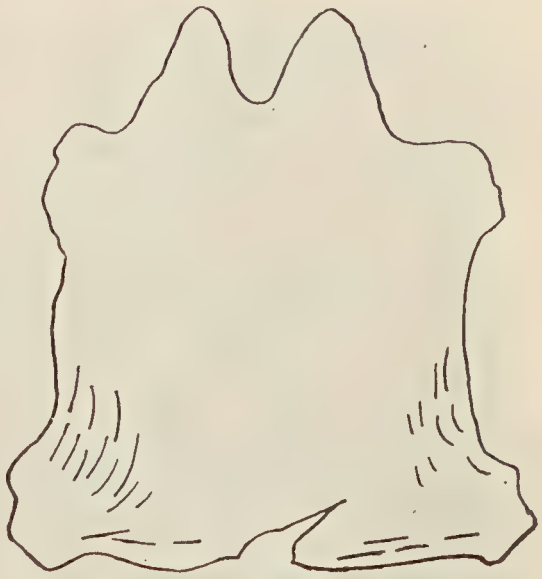


Fig. E.—Tail piece causes a tear in the processing. Score marks and nicking weaken the skin.

Fig. D illustrates a skin from which the tail piece has been cut; in addition there are scoring marks, i.e., it has been practically cut through in several places, with the result that it has been considerably weakened. Fig. E shows how damage may be caused in the course of processing to a skin which has been weakened by the removal of the tail piece.

To help buyers in New Zealand, the Government there has recently instituted a scheme for the standardization and grading of hides and yearling and calf-skins. Buyers for our local manufactures should be able to purchase with full confidence that they are getting material free from all avoidable defects, and overseas buyers must be given an article that will stand comparison with the world's best; otherwise our export of hides and skins will not increase but must inevitably decline.

The standardization of grading and classification of hides, yearlings and calf skins, on a basis similar to that adopted in New Zealand would, no doubt, be of general advantage to the farmer, country butcher, as well as to abattoir and freezing works proprietors. It would be the means of placing these goods on the market in the most suitable selling parcels

in a manner more efficient and economical than that which exists in this State at the present time. The grading and classification would promote and establish confidence to the buyers, including tanners, processors, exporters and brokers. It would also procure for the producer more regular and better prices for one of our many primary products.

A bulletin dealing generally with the Flaying and Curing of Hides can be obtained free of charge from the Director, Department of Agriculture.—C.2.

All-Australian Porker and Baconer Carcass Competitions

THE Australian Meat Board will continue during the present year the competitions for export baconer and porker carcasses successfully launched in December, 1937. The object of the competitions is to encourage the breeding of the right type of pigs for the export market and to advertise the Australian product overseas. Conditions will be the same as last year. Entries for the next competitions must be delivered to works on or before 15th October next. Carcasses will be judged in London on or about 15th December.

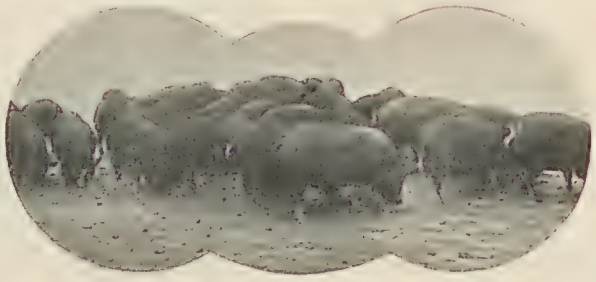
Each entry must be of three carcasses, sired by a pure bred boar from a litter recorded by the Australian Stud Pig Breeders' Society. The three carcasses may be selected from a maximum of five eligible pigs submitted. Such particulars as age, breeding, feeds and methods of feeding and husbandry will be asked of entrants. The dam need not be pure bred, but the breeding of the dam must be stated.

The weight range for entries in the porker class is from 60 lb. to 90 lb. and in the baconer class from 120 lb. to 160 lb. dressed weight, and including heads in each case. Only one entry of a particular breed or cross may be made by an individual entrant. No entry fee will be charged but only those entries adjudged as of first grade export standard, by a Commonwealth Inspector, will be eligible to compete.

Competitors will be required to lodge their entry forms in the first instance with meatworks or bacon factories which they supply and to make arrangements with such works or factories for the delivery of the carcasses to a store in London as nominated by the Board. Payment for the pigs will be made by works in the usual way. The works will be reimbursed by the Board to the extent of ¼d. per pound on baconer carcasses as compensation for mutilation in judging.

Prizes to the value of £25 will be provided by the Board in each class. This amount will be divided up as follows:—First £9, second £6, third £4, fourth £3, fifth £2, sixth £1. In addition, a trophy valued at £10 10s. will be competed for in each class. First class certificates will be awarded to all entries scoring over 70 per cent. of total points and second class certificates to all scoring from 60 to 70 per cent. of the total.

Entry forms may be obtained from the office of the Australian Meat Board, 401 Collins-street, Melbourne, C.1.; from the Veterinary Officers of the Department of Commerce in each State; from the Secretaries of the State Branches of the Australian Stud Pig Breeders' Society; and from meatworks or bacon factories handling export pigs.



By A. W. Jessep, M.Agr.Sc., B.Sc., Dip. Ed., Principal, School of Horticulture, Burnley

Gardening.

SEPTEMBER is a very busy month in the garden. Early August this year was colder than normal, yet gardens are showing definite signs of spring. The ornamental fruit trees are in full bloom, and the gardener has an opportunity of deciding which he likes best.

Daffodils, ranunculi and anemones are now coming into bloom. For early spring flowers, bulbous plants are probably the most satisfactory. Roses have started into growth and a keen lookout must be kept for the first sign of aphis. As soon as any appear, the bushes should be sprayed with nicotine sulphate and soft soap, or any other mixture that will control the pest.

Sow seeds of any of the following :—Ageratum, antirrhinum, aster, carnation, celosia, delphinium, dianthus, gaillardia, geum, lupin, marigold, nasturtium, petunia, phlox and scabious. Plant out such perennials as gladiolus, agapanthus, valotta, canna, begonia, pentstemon, aster and phlox. It is also a good time to plant out evergreen shrubs.

An early sowing of gladioli should be made immediately. They will flower in from 110 to 120 days from the date of planting. After September a reduction of ten days per month can be allowed in calculating the time of flowering. Thus, if planted in October, they will flower in from 100 to 110 days ; if planted in January, they will take from 70 to 80 days. The primulinus type will reach the flowering stage about ten days before the grandiflorus type.

The primulinus, which is sought after for decorative purposes, is distinguishable by the hood effect formed by the upper petal which is bent over, and the flowers are smaller ; the grandiflorus has larger flowers with no hood, and is more robust in appearance. It is the more popular type and may be used for exhibition purposes, but at the same time is excellent for indoor decoration.

With good corms, gladioli are easy to grow. If the spike be cut when the first two or three flowers are out, it will last for several days in water, but the basal flowers should be removed as they fade.

A sunny position is best, and, if the soil is not naturally rich, a dressing of well rotted farmyard manure should be worked deeply into it some weeks before the time of planting. If farmyard manure is not available, put on market garden manure when planting at the rate of about 2 oz. to the square yard.

Gladiolus.

The best time for planting depends on local conditions of soil and climate. In the light soils of northern Victoria early plantings could be made in July or early August; in the southern portion in August; but in the heavier soils corms should not be put into the ground until about three weeks later. By making monthly plantings from August until early February, a succession of flowers may be obtained from late November until as late as June, if early frosts do not occur.

The depth of planting depends on the size of the corms, the time, and the type of soil.

In mid-season, if the soil is light, corms should be planted 6 inches deep, but in a heavy soil about 3 inches is deep enough. The smaller the corm and the heavier the soil the shallower should be the planting. Late and early sowings also should not be deep, but on an average 3 inches to 4 inches below the surface. For garden effect gladioli are best planted in clumps of six to twelve; 8 inches should be allowed between each corm, and from 18 inches to 2 feet between each clump. If grown for cut flowers, they are best planted in double rows 6 to 9 inches apart, with 6 inches between the corms and 2 ft. 6 in. between the double rows.

The soil should be moist at the time of sowing and should not be watered until the plants are well above ground; from then on they must be given a good watering about once a week during the dry weather. Do not give light daily sprinkles. After flowering little or no watering is necessary.

As soon as the corms have matured, i.e., about six weeks after cutting the flowers and before the foliage turns yellow, they should be lifted. After lifting, cut off the tops and leave the corms in a warm, sheltered spot to dry. They should dry off in two or three weeks. Remove the old corm and loose skin and burn it to destroy pests. Store them in a cool, dry, airy place, preferably in boxes with wire netting bottoms.

Treatment of corms:—Thrips are prevalent in some districts and may seriously damage the growing plants and so cause very poor blooms. There is a possibility of the eggs of thrips being secreted in the corms; to get rid of them flaked naphthalene at the rate of 1 oz. for every corm should be placed among the stored corms once a month during the warmer weather. In addition, before the corms have commenced to shoot, dip them into a solution of corrosive sublimate at the strength of 1 in 1,000 for 6–12 hours, and if not ready to plant then, store them where thrips are not likely to be present. If the same containers are to be used, dip them into boiling water or disinfect before putting the treated corms back in them.

Varieties:—There are hundreds of very good varieties of almost every colour except good blues. Of the primulinum type, the following are popular: Alice Tiplady, a most attractive apricot, orange shade; tangerine, a rich orange scarlet; Gladdie Boy, orange with a lemon throat; and Butterboy, a clear buttercup yellow.

Some good grandiflora types include Picardy, a beautiful light salmon, apricot colour, and one of the most popular for indoor decoration; Mrs. S. A. Errey, a very good grower of a brilliant orange colour, and especially good in the late autumn. Rose Dawn is a new variety that should become very popular; its flowers are large, of the rose shade. Canberra has a long spike of pure yellow flowers; Marmora, lavender-grey flowers of good quality, and Mother Machree, grey-lavender coloured flowers which are distinctly good, while Kalorama has salmon orange flowers.

Many gladiolus growers issue catalogues, and it is advisable for the amateur to secure one for reference purposes.

Vegetable Culture.

Although the soil is beginning to warm up, frosts are still very likely to occur; therefore if any seeds are sown this month care must be taken to provide protection for the young plants. If it is desired to sow some early, frost-tender vegetables, such as cucumbers or pumpkins, do so either in a frame under cover, and transplant the seedlings when all danger of frost is passed, or sow them in their permanent positions and place a tin over them every night, or better still a tin or box with a glass top, for the glass will help to warm the ground during the daytime.

Make a sowing of tomato seeds under cover and harden them off ready for planting in late September or early October. A small early sowing of butter beans could be made this month, but in southern Victoria it is better to wait until October before planting the main crop.

Of the many very useful annual vegetables, lettuce is perhaps the most popular of the summer ones. It is a quick grower, free from most diseases,

and is unsurpassed for salad purposes. No vegetable patch should be without lettuces from October until May. The chief essentials are a good, rich, friable soil with plenty of moisture, good cultivation and room to develop.

During the early part of the season it is best to sow the seed in a seed-bed and transplant the seedlings when from 1½ inch to 2 inches high into rows 18 inches apart with 9 inches between the plants. Later in the season, better results may be obtained by sowing the seed very thinly in rows, and thinning out and transplanting the surplus seedlings into rows as described above.

Thin out firstly till plants are about 3 inches apart; later thin out till there is 9 inches between plants. As lettuce may be used at almost any stage of growth, there need be little waste. The plants must be kept growing quickly; so the soil between them should be stirred frequently and not allowed to get dry.

In the early part of the season, lettuces take about 60 days to come to maturity from the date of sowing the seeds, but during the summer months they mature in about 40 days. In midsummer they grow well in a partially shaded spot, such as between rows of taller growing vegetables.

There are two main types of lettuce, the cos and the cabbage forms. The cos does not produce hearts, but has long tender leaves. White cos and Eclipse are two varieties. The heart or cabbage type is the more popular, and of these Webb's Wonderful, New York, Drumhead and Iceberg are good growers and produce large hearts which are very crisp. The leaves of Iceberg are pinkish at the tips, and this causes a prejudice against it. To ensure having lettuces when they are required, make several sowings at about monthly intervals throughout their growing period, but do not sow too many at a time, as they quickly run to seed after reaching maturity.

Orchard Notes

By J. L. Provan, B.Agr.Sc., Senior Horticultural Instructor.

THE orchard is brightened in September by the blossoming of apricots, cherries, peaches, and nectarines. These fruits, with the exception of cherries, are usually self-fruitful, but cherry blossom requires cross-pollination with compatible varieties in order to set commercial crops. Varieties which bloom early include Burgsdorf, Early Purple Guigne, and Werder's Early Black; varieties which blossom later are Bigarreau Twyford, Bedford Prolific and Early Rivers, while the late blossoming varieties include Reine Hortense, Bigarreau Napoleon, Florence, and St. Margaret. Some overlapping in blooming period occurs between the early and mid-season blossoming varieties, and some of these in turn overlap the early blossoms of the varieties which bloom late, i.e., at the end of September and early October.

Brown rot of cherries is a limiting factor in the production of this fruit, and, frequently, infection may occur at blossoming time, if weather conditions are favorable to the development of the fungus. To reduce the losses from this disease, growers should remove and destroy all mummies and complete the ploughing before buds open, paying particular attention to the cultivation of the strips of soil around the trees. Apply a spray of Bordeaux mixture 6 : 4 : 40, or lime sulphur 2 gallons in 80 at the "green-tip" stage, and follow by a 1 in 80 lime-sulphur spray when the fruit is quarter grown.

The first application of bordeaux mixture 6 : 4 : 40 spray for the control of black spot of pear trees will be made, at the "green-tip" stage, to Packhams and Winter Nelis varieties probably during the first week of September, and during the second week Josephine and Beurré Bosc will require spraying, followed by Williams. The stage of growth of the blossom buds will determine the time of application of the spray. The correct "green-tip" stage is recognized when the maximum number of blossom buds has the brown scales (bracts) separating and the tips of the green folded leaves are just visible.

The second 6 : 4 : 40 bordeaux mixture spray is applied to all varieties, except Josephine, from eight to twelve days later according to the variety and the season. The correct stage of growth in this case is known as the "finger" stage, so called because the green leaves are separated from the blossom buds which are beginning to separate in the cluster, but the white petals have not yet appeared. If a 6 : 4 : 40 bordeaux mixture spray is applied later than this stage, russet of the fruit may occur. Instructional circulars, dealing with black spot control of pears and apples, are available

free on application. Growers are also advised to communicate with local Orchard Supervisors for further particulars.

In the August *Journal of Agriculture* a report of the demonstration plot work appeared. This report contains much valuable information on the control of black spot and codling moth of apples and pears.

This month many growers will be actively interested in grafting over varieties of trees to more profitable varieties. The various pole-grafting methods are recommended for this purpose, and a free reprint describing these methods is available on application. Growers who intend to graft will be interested in recent developments in the manufacture of sealing materials. Quite a large proportion of the success in grafting depends on the use of reliable materials. Not only must the grafts be carefully sealed, when the operation is completed, but also they will require to be inspected frequently and resealed if necessary.

Citrus growers who have observed symptoms of mottle-leaf on their trees should apply a zinc sulphate-lime spray just before growth commences. The formula for this spray is as follows:—zinc sulphate 10 lb., slaked lime 5 lb., and water 100 gallons. This spray will not cure mottle-leaf in all instances because sometimes this condition is caused by faulty drainage, starvation or salt. If these causes are absent, affected citrus trees usually show marked response to the application of the zinc-lime spray. In very bad cases two applications are sometimes necessary to restore the foliage to a normal green colour.

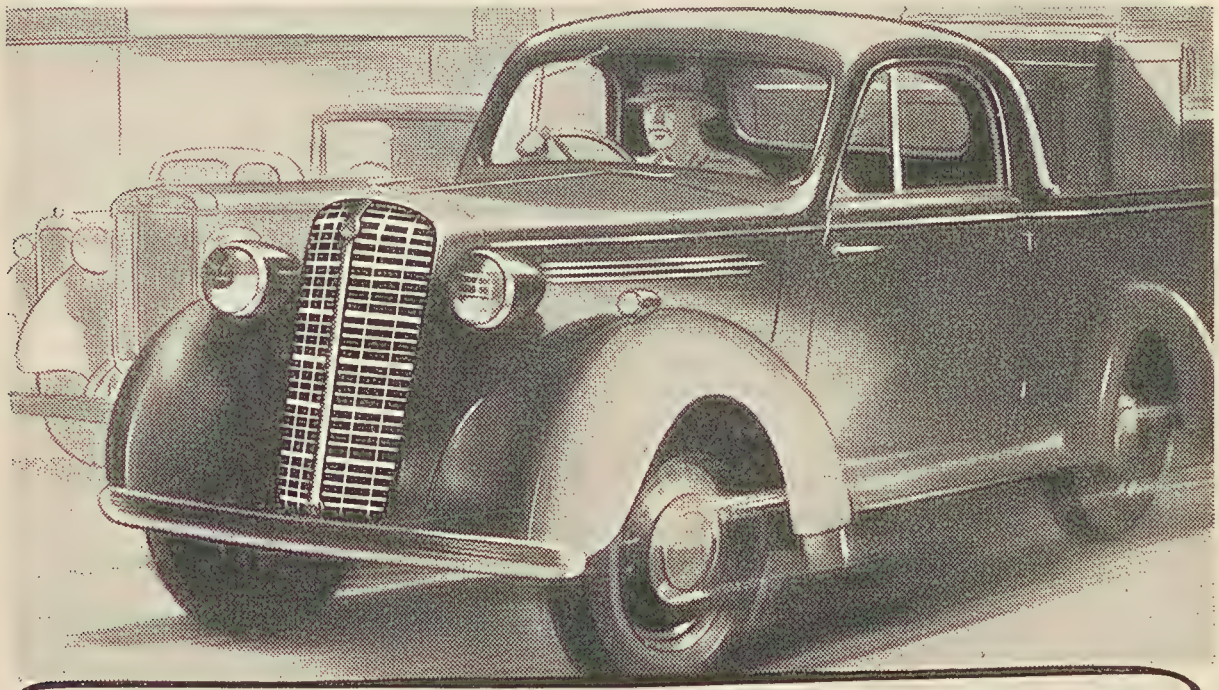
New packing charts for apples, pears, oranges, lemons, grapefruit, and tomatoes, printed on coloured cardboard, which can be hung on the grader, or in any other convenient place, have been issued. Growers or packers who desire copies, which are free, should apply to the Director, Department of Agriculture, Treasury Gardens, Melbourne, C.2.

Tubercle Free Herds

The following herds have been declared free of tuberculosis under the scheme conducted by the Department of Agriculture. Under this scheme a tuberculosis-free accredited herd of cattle is one in which the entire herd has passed two negative, successive, annual physical examinations and tuberculin tests, or, upon disclosure of infection, three semi-annual, successive physical examinations and tuberculin tests applied by a State Veterinarian or by a qualified and registered veterinarian who is approved by the Chief Veterinary Inspector for that purpose.

ACCREDITED TUBERCLE FREE HERDS.

Herd Number.	Name.	Address.	Number in Herd.	Herd Number.	Name.	Address.	Number in Herd.
1	State Research Farm	Werribee ..	259	10	Banyule Stud Pty. Ltd.	Heidelberg ..	122
2	Warragul High School	Warragul ..	35				
3	Payne, A. E. T. ..	"Yarra View," Lilydale	80	11	McIntosh, John ..	"Burnwood," Merrigum	31
4	Dennis, Mrs. A. A. ..	Frankston ..	14	12	Black, Mrs. Agnes ..	Mount Noorat	40
5	Lady Talbot Milk Supply Company	Cranbourne ..	418	13	Black, I. S. ..	"The Cottage," Mount Noorat	44
6	Reid, Ralph G. ..	"Holmwood," Koo-wee-rup	99	14	Read, John D. ..	"Springhurst Estate," Springhurst	99
7	Harris, J. W. ..	"Rowena," Clyde	72	15	Kelly, C. ..	"Glenmore," Creighton's Creek, Euroa	22
8	School of Horticulture	Burnley ..	8				
9	Lawrence, P. H. ..	"Rainga," Tarrawarra	59	16	Gorman, A. W.	"Cathcart," Alexandra	57



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London Markets

Weekly Prices

The following information as to prices offering in London for the principal Victorian primary products has been taken from cablegrams received each week by the Department of Agriculture from the Victorian Agent-General in London.

Product.		Price for Week Ending—			
		5th Aug.	12th Aug.	19th Aug.	26th Aug.
		d.	*d.*	*d.*	*d.*
Lamb, 1st quality, Victorian	29–36 lb.	7¼	..	7¼	..
Lamb, 1st quality, Victorian	37–42 lb.	7⅛	..	7⅛	..
Lamb, 1st quality, other States	29–36 lb.	7	..	7	..
Lamb, 1st quality, other States	37–42 lb.	7	..	7	..
Lamb, 2nd quality, Victorian	28 lb. and under	7⅛	7⅛	7⅛	7
Lamb, 2nd quality, Victorian	29–36 lb.	6⅝	6⅝	6⅝	..
Lamb, 2nd quality, other States	28 lb. and under	7	7	7	7
Lamb, 2nd quality, other States	29–36 lb.	6½	6½	6½	..
Lamb, 3rd quality, all States	28 lb. and under	6½	6⅝	6¾	6⅞
Lamb, 3rd quality, all States	29 lb. and over	6¼	6¼	..	..
Mutton wethers and/or maiden ewes	Under 40 lb.	3⅞	3⅞	3⅞	4
Mutton wethers and/or maiden ewes	41–48 lb.	3½	3⅜	3⅜	3⅜
Mutton wethers and/or maiden ewes	49–56 lb.	..	..	..	..
Mutton ewes	Under 40 lb.	3¾	3¾	3⅞	3⅞
Mutton ewes	41–48 lb.	3⅜	3¼	3¼	3¼
Beef, frozen ox hinds	145–210 lb.	..	..	..	..
Beef, frozen ox crops, weights corresponding	..	..	..	..	..
Beef, chilled ox hinds	145–210 lb.	4¾	4½	4⅞	5⅜
Beef, chilled ox crops, weights corresponding	..	2⅝	2⅝	2⅞	3⅝
Pork, Australian 1st quality	60–80 lb.	6¾	6⅝	6⅝	6¾
Pork, Australian 1st quality	81–100 lb.	6⅝	6⅝	6⅝	6⅝
Pork, New Zealand, 1st quality	60–80 lb.	6⅝	6⅝	6⅝	6¾
Pork, New Zealand, 1st quality	81–100 lb.	6⅝	6⅝	6⅝	6⅝
		s.	*s.*	*s.*	*s.*
Bacon, Canadian	per cwt.	98	97	92	92
Bacon, Empire (cured in England)	per cwt.	92	90	87	89
Bacon, Danish	per cwt.	103	103	99	99
Butter, unsalted, choicest grade	per cwt.	120–121	118–120	116–117	117–118
Butter, unsalted, 1st grade	per cwt.	..	117–118	..	116
Butter, unsalted, 2nd grade	per cwt.	..	..	..	..
Butter, unsalted, pastry grade	per cwt.	..	..	..	..
Butter, salted, choicest grade	per cwt.	120–121	117–118	115–116	116–118
Butter, salted, 1st grade	per cwt	119–120	116–117	114–115	115–116
Butter, salted, 2nd grade	per cwt.	118	115–116	112–113	113–114
Butter, salted, pastry grade	per cwt.	..	110	108–109	108–109
Butter, Danish	per cwt.	123–126	125	129	134
Market (butter)		Steady	Quiet	Steadier	Firm

Professional Papers

[This section is devoted to professional papers and articles of a scientific character.]

Eelworm (Heterodera Schachtii Schmidt) Disease of Cereals

By C. R. Millikan, M.Agr.Sc., Plant Pathologist.

DURING the period 1934 to 1937, inclusive, experiments have been conducted by the Department of Agriculture into the importance and control of the eelworm attacking cereals in the Wimmera district of Victoria. The field work in connexion with these investigations was conducted on a heavily infested area on the farm of Mr. C. P. Dahlenburg at Nhill. The laboratory and greenhouse studies were performed at the Plant Research Laboratory, Burnley.

Description and Life History.

In Australia, what was probably the eelworm was first observed in 1906 in South Australia. Since 1928, Davidson (5) and Hickinbotham (18) have found *Heterodera schachtii* Schm. attacking cereals in various parts of that State. Although the worm was recorded as attacking cereals in the Wimmera district of Victoria in 1930, it had undoubtedly been present for a much longer period, as many instances have been noted of infestation on the roots of grasses and wild oats growing on areas which had been out of cultivation for a considerable number of years. In 1936, the eelworm, presumably the beet strain, was also recorded on sugar beet grown in the Maffra district, Victoria.

Fig. 1.—Immature cysts of Heterodera schachtii on wheat root.

Fig. 2.—Mature cysts of H. schachtii showing waxy secretion.

Although the eelworm *Heterodera schachtii* attacks a wide range of plants (26), the economic importance of this fact is limited because of the existence of biological races. These races, which are distinguished as the beet strain, potato strain, pea strain, and oat strain, are much more restricted in the range of plants in which the immediately succeeding generations can develop to the mature stage. A further strain attacking beans has been recorded (11). Morphological differences between these strains occur. The only stage of the worm which is visible to the naked eye is the lemon-shaped female attached to the roots of affected plants (Fig. 1). The head is firmly inserted into the tissues of the root. When immature, the developing female is white in colour, but later becomes black and is often covered by a waxy secretion (Fig. 2). The female at this stage is dead, and the body forms a cyst containing up to several hundred eggs (Figs. 3 and 4). The

cyst drops into the soil and the eggs contained therein may remain in a dormant condition for several years.

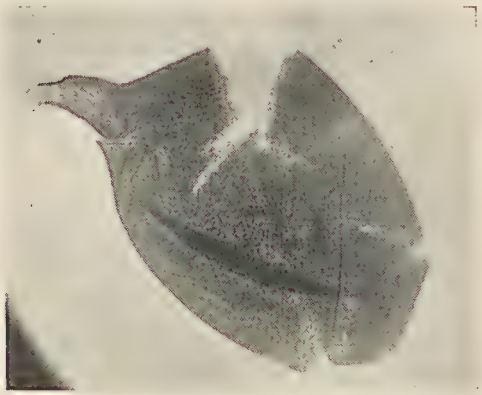

Fig. 3.—A partly crushed cyst showing eggs contained therein.

Hatching of the eggs (Fig. 5) has been shown to be stimulated by root secretions. The development of the larva in the roots of wheat and barley leads to the production of a very branched root system (Figs. 7 and 8). This symptom is not so characteristic of eelworm infestation of oats in Victoria as of wheat and barley. One generation only develops during the season. The white swollen females on the roots of infested plants usually become visible to the naked eye about the end of September under Victorian conditions.

In the field, the appearance of the above ground portions of affected crops varies considerably, and is dependent on seasonal conditions, and the fact that eelworm infestation of cereals in Victoria is nearly always associated with root rot fungi. Crops affected with these organisms often appear "patchy", particularly from the middle of the season onwards (September). In parts, the growth may be so checked as to result in "no growth" patches, or the plants may be slightly stunted and pale yellowish-green in colour. On the other hand many instances have been noted of plants which were heavily infested with eelworms without showing any marked damage to general growth. In a dry spell the effects of eelworm infestation are much more marked than where the moisture content of the soil is normal.

Numerous measurements of the different stages of the worm attacking cereals in the Wimmera district of Victoria were made. These may be briefly summarized as under:—

Cysts.—Black to light brown in colour, lemon shaped, length varying from 0.552 to 0.975 mm. and the width from 0.330 to 0.592 mm.

Larvae.—Round, 0.43 mm. to 0.49 mm. long, while the stylet varied in length from 24·8μ to 29·2μ.

Eggs.—Oblong with rounded ends, approximately 126μ x 28·5μ.

The length of the female is greater than that recorded by Triffitt (40) for the oat race.

Fig. 4.—Eggs of H. schachtii *showing larvae coiled up inside.*

Owing to the fact that wheat varieties are more consistently and more severely attacked than other cereals by the form of *Heterodera Schachtii* present in Victoria, and that a wide variation in resistance to attack is manifested by different oat varieties, it is considered that this form of the worm would be better described as the wheat race. Specimens of the worm were forwarded to the Imperial Bureau of Agricultural Parasitology, St. Albans, where Dr. Triffitt confirmed its identity as *Heterodera schachtii.*

During the course of these investigations numerous microcysts were found in soil samples obtained from eelworm infested areas. These were amber to dark brown in colour and spherical, and from 0·170 mm. to 0·290 mm. in diameter. The occurrence of similar microcysts in British soils has been recorded by Triffitt (44). She has

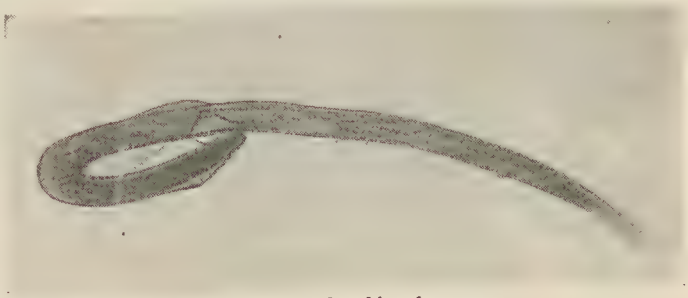

Fig. 5.—Larva hatching from egg.

shown that they are of other than nematode origin, although their true nature has not been determined.

Inoculation Experiments— Their Relation to Field Symptoms.

As certain field observations, referred to later, had led to uncertainties as to the relation of eelworms to poor growth of wheat in the Wimmera district of Victoria, it was considered fundamental to the whole investigation that critical inoculation experiments be conducted to determine the capacity of eelworms to produce disease symptoms in wheat. Various fungi associated with root rot lesions on wheat grown at Nhill have also been studied. The experiments were conducted in the greenhouse at Burnley in 1936 and 1937. Free Gallipoli wheat was used, in 1936, to sow two series of pots, namely :—(*a*) unsterilized Burnley soil, and (*b*) sterilized Burnley soil.

Fig. 6.—Enlarged view of head end of larva. Note the well developed muscle fibres.

In each of the above series the following treatments were tested :—

(1) Untreated. (2) Inoculated with eelworms. (3) Inoculated with *Fusarium culmorum*. (4) Inoculated with *Helminthosporium sativum*, and (5) Inoculated with *Rhizoctonia solani*.

Each treatment was duplicated and 8-in. flower pots were used, five plants being grown per pot. All pots were kept relatively dry to provide favorable conditions for the development of symptoms. Eelworm eggs and larvae were used for inoculation purposes, but the technique used to inoculate the plants with them proved unsatisfactory. This was as follows :—Before sowing the pots the wheat was germinated so that the plumule was about half an inch long and several roots had developed. This procedure was necessary owing to the type of pot used and the attendant difficulties of inoculating the roots of plants with eelworm larvae. The larvae were then placed on such roots as had developed at this stage and the germinated grains covered with soil. However, as practically no eelworm cysts developed on the roots no difference in growth occurred between the eelworm inoculated plants and the control.

In the case of the fungi, pieces of agar culture were placed underneath and above the grain where sown. The most marked results with the fungi were obtained in the sterilized soil series, where in the case of each fungus, the inoculated wheat plants were killed after about ten weeks. In the unsterilized soil the effect of inoculation with the fungi was not so marked. *Helminthosporium sativum* and *Rhizoctonia solani* produced only slight stunting compared with the control plants, whereas *Fusarium culmorum* produced a more pronounced stunting than the other two fungi, and the tips of the leaves of the plants in this latter treatment became yellowish and withered. From this experiment the capacity of the fungi commonly associated with eelworm infestation at Nhill was demonstrated, but the capacity of eelworms to produce similar symptoms still remained to be proved, because the technique used was unsatisfactory for producing a high infestation of eelworms.

In view of this experience, a different method of eelworm inoculation was used in the 1937

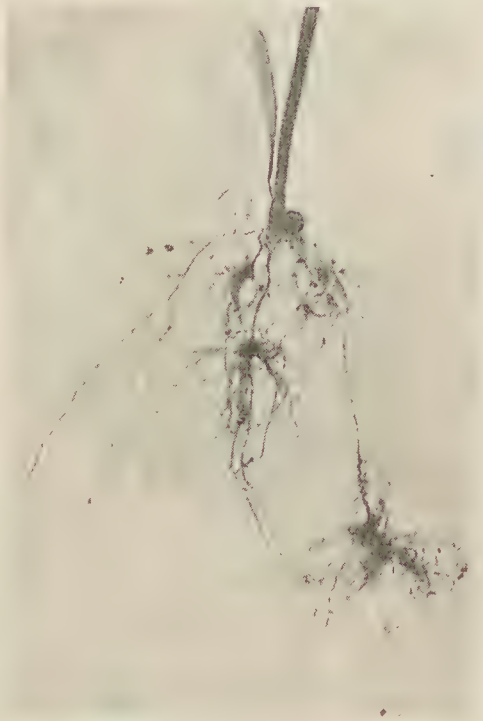

Fig 7.—Showing the branching of roots of a young wheat plant due to eelworm infestation.

Fig. 8.—Showing the branching of wheat roots due to eelworm attack. Left—Non-infested plant. Right—Plant heavily infested with eelworms.

inoculation experiments. The treatments employed in 1937 were as follow :—

Series C,Control; E, Eelworm inoculated; H, *Helminthosporium sp.*; M, *Curvularia ramosa*; R, *Rhizoctonia solani*, and F, *Fusarium sp.*

Metal canisters, 4 inches in diameter, 8 inches deep, and watertight at the bottom, were used instead of 8-in. flower pots. Before using, the insides of all canisters were coated with a thin layer of paraffin.

For Series E (eelworm inoculated) sufficient Burnley soil for fifteen canisters was thoroughly mixed with eelworm cysts and eggs, which had been previously collected from the roots of wheat plants grown in infested soil at Nhill. The cysts were first sterilized in mercuric chloride 1–1,000 for ten minutes, washed in five changes of sterile water and kept in sterile water for two to three weeks. During this time no fungi developed on the cysts. As these cysts were later proved to contain viable eggs, it was evident that the mercuric chloride treatment had not killed the eggs within the cysts. Similar evidence has been obtained by Johnson (28).

Each canister, plus soil, weighed 2,020 grams, and the rate of eelworm inoculation was approximately six cysts per 100 grams of soil. As it was intended to grow the plants under relatively dry conditions to favour the development of symptoms, the moisture content of the Burnley soil used in this test was low, and was kept constant during the whole experiment by maintaining each canister, plus soil, at a constant weight of 2,020 grams, by the addition of sufficient water every second day to make up the loss of weight due to evaporation and transpiration. The Burnley soil was a light sandy loam of medium fertility. The method of inoculation used for the fungi was to place a piece of potato dextrose agar culture of the particular fungus below and above the grain when sown. In all canisters two plants of Free Gallipoli wheat were grown to ensure some competition and thus assist in the production of symptoms.

Fifteen canisters were sown to treatment E (eelworm inoculation) and ten canisters to each of the remaining treatments, including the controls. The experiment was sown on 24th July and the plants had appeared above ground by 30th July. The growth of all plants, including the controls, was poor, owing to dry conditions to which the plants were subjected, and to the moderate fertility of the Burnley soil in which they were grown. No difference in growth

Fig. 9.—Inoculation test showing the effect of eelworm infestation on wheat grown under unfavourable nutritional conditions. C, control plants ; E, soil inoculated with eelworms. (Eighteen weeks after germination.)

between the control plants and the Series E (eelworm inoculated) plants was noticeable until the controls reached the fourth leaf stage, approximately 50 days after germination. At this stage, the plants in Series E were still in the third leaf stage.

Three weeks later, when Series E was in the fourth leaf stage, the two bottom leaves of these plants were dead, and the tip of the third leaf had commenced to brown. The control plants, on the other hand, were in the fifth–sixth leaf stage and therefore taller. The two bottom leaves were dead, but the remaining leaves were darker green in colour than those of the eelworm inoculated plants. The eelworm inoculated canisters required far less water every second day to restore them to their normal weight (2,020 grams) than did the controls, which indicated that the eelworm infestation, besides retarding the growth of the plant, had caused a marked decrease in the rate of transpiration.

On 8th December when the experiment was terminated the control plants had produced ears which were, however, small, but the eelworm inoculated plants were dying, and none showed any signs of ear production. The average heights of the plants in the two series at the end of the experiment were as follows :—

Series C.—Controls .. .. 24.1 cm.
Series E.—Eelworm inoculated 13.3 cm.

The appearance of the plants at this stage are shown in Fig. 9.

The soil was then carefully washed from the roots of the plants shown in Fig. 9, when it was seen that the root development of the controls was very much superior to that of eelworm inoculated plants (Fig. 10). The roots of the latter plants were much shallower than normal and were very branched. An examination of these roots showed that large numbers of fully developed eelworm cysts occurred on the roots, but no evidence of the presence of root rot fungi was obtained. An examination of the roots of the control plants did not reveal the presence of any eelworm cysts. Goodey (16) and others have described similar symptoms on oats, resulting from eelworm infestation. It may be assumed therefore, from the above experiment, that under conditions that are not completely favorable to the development of the wheat plant, eelworm infestation may result in a severe reduction in growth and root development.

The fungi selected for inoculation tests were those which occurred most commonly at Nhill. Treatment H. (*Helminthosporium sp.*) produced the most marked effect on the growth of the wheat. At three weeks after germination these plants were definitely stunted, as compared with the controls, and the seedlings in one canister were completely killed. The fungus *Helminthosporium sp.* was re-isolated from browned areas on these dead seedlings. As the test proceeded the other plants in Series H. remained noticeably dwarfed.

No obvious differences in growth between the treatments F. (*Fusarium sp.*), M. (*Curvularia ramosa*), and R. (*Rhizoctonia solani*) and the

Fig. 10.—Roots of plants shown in Fig. 9, showing marked reduction in root development resulting from eelworm infestation. Left, controls; Right inoculated.

controls became apparent. This may possibly have been due, however, to unsatisfactory inoculation technique.

In the above experiment the pathogenicity of *Helminthosporium sp.* isolated from wheat plants grown at Nhill has been demonstrated. Positive results in the case of other fungi were obtained in the 1936 inoculation tests. Hynes (22, 23, 24) and others have obtained positive results in pathogenicity studies with certain of the species of fungi isolated from root rot lesions on plants grown at Nhill. From the above tests it is seen that the natural infestations of eelworm and root rot fungi occurring in the soil at Nhill, are, under certain conditions, capable of producing a severe reduction in growth and yield of wheat, such as actually occurs in the district. Many instances of wheat plants heavily infested with eelworms, but which showed apparently normal growth, however, have been noted in the field.

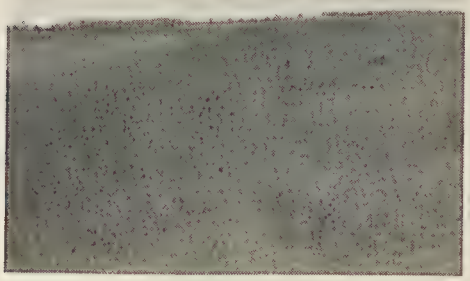

Fig. 11.—Showing the difference in growth between early (left) and late (right) wheat varieties grown on an eelworm infested area.

In the 1934 experiments, a remarkable difference occurred between the appearance of the early and late wheat varieties, the former being definitely superior in respect of growth and the number of heads produced as is shown in Fig. 11. An examination of the roots of these plants revealed that eelworm cysts were quite prevalent on both the early and late varieties, so that the increased number of heads produced by the early varieties was apparently attributable to some seasonal peculiarity favouring those varieties, as it was noted that the early types had produced more adventitious roots than the late ones. In the following year no such differences in growth between early and late wheat varieties occurred. With regard to the potato strain of *H. schachtii* O'Brien and Prentice (35) have shown that late varieties of potatoes do not tolerate eelworm attack as well as early ones. Carroll and McMahon (3) found that early potatoes may be successfully grown in soil that is so heavily infested with eelworms that late varieties are total failures.

In 1935, a duplicated variety experiment was sown on two different sections of the experimental area which had been found by means of cyst counts to have different soil populations of eelworms. Apart from the eelworm factor the areas appeared to be identical and were approximately only fifty yards apart. Four varieties each replicated three times were sown in one-thirtieth acre plots on each area. No obvious difference in growth occurred between the wheats on these areas during the season, and at harvest time no significant differences in yield were obtained as is indicated by the results in Table 1. After harvest a soil sample was obtained from each plot and a cyst count was made by a method similar to that employed by Smith and Prentice (39). Each sample consisted of a composite of fifteen separate borings to a depth of four inches with a 1-in. diameter soil sampling tube. In making the cyst count, the method used was almost identical with that referred to above, the only modifications being the use of filter papers marked into 1-cm. squares to facilitate the counting, which was done by means of a low-powered dissecting microscope, and the adoption of 12 grams as the unit of soil. The cysts and organic debris were removed from the flask to the filter paper by means of a fine camel hair brush. Six separate counts were made on each soil sample and the cyst population of each sample was expressed as the sum of these counts, i.e., the number of cysts per 72 grams of soil. The average results are shown in Table 1.

Table 1.—Effect of Different Soil Populations of Eelworms on the Yield of Wheat Varieties.

Variety.	Lightly Infested Area.		Heavily Infested Area.	
	Cyst Count per 72 Grams of Soil.	Yield.	Cyst Count per 72 Grams of Soil.	Yield.
		bus./ac.		bus./ac.
Nabawa ..	28	31·1	68	28·4
Ghurka ..	29	32·0	55	33·2
Free Gallipoli ..	34	27·8	69	27·0
Rajah	45	25·9	75	25·4

These figures indicate that there was a definite significant difference in cyst population between the two areas which was not accompanied with any significant difference in yield. Further

reference to this experiment is made in the section of this report on the effect of soil composition on eelworm population. Somewhat similar results have been obtained by Smith and Prentice, who found that there may be a relatively high cyst content of the soil without an apparent diminution in the yield of potatoes.

At Nhill, factors affecting the root development of the wheat plant in such cases have apparently been of more importance to the ultimate yield of the plant than eelworm infestation. Factors, such as seasonal rainfall, manurial treatment, time and depth of sowing, which have been found to appreciably affect root development and yield, have little effect on the amount of eelworm infestation. Further reference to these factors occurs later.

The production of adventitious roots by the plant tends to reduce the deleterious effects of eelworm infestation for two main reasons. Firstly, the development of such roots results in an improvement in the nutrition of the plant, and secondly, the development of the worm to the cystic stage usually does not occur as commonly in the adventitious roots as it does in the primary roots. Root rot fungi occur freely in association with eelworms at Nhill, particularly in wheat and in some instances at least, these undoubtedly have been the major cause of poor growth. In certain cases, sections of the roots of cereals grown in Nhill soil have revealed the presence of an unidentified fungus in the cortical cells, adjacent to the vascular area (Fig. 12). In studies on the pathogenicity of *H. schachtii* to potatoes, Triffitt (41) has also recorded the occurrence of an unidentified species of fungus in both healthy and attacked tissues of parasitized potatoes.

Although the capacity of *H. schachtii* to produce disease symptoms in wheat has been demonstrated by an inoculation test at Burnley, symptoms comparable with those obtained in that experiment often do not occur in heavily infested crops in the field. The extent of eelworm damage to cereals in the Wimmera district of Victoria is, therefore, dependent on external factors in a similar manner to the relationship suggested between "potato sickness" and *H. schachtii*. In this instance Triffitt (41) and Blenkinsop (1) have concluded that factors such as adverse soil conditions are responsible for the production of disease symptoms in the presence of *H. schachtii*. The Imperial Bureau of Agricultural Parasitology (27) has summarized the work on the relation of *H. schachtii* to "potato sickness" by stating that this disease is probably due to an infestation

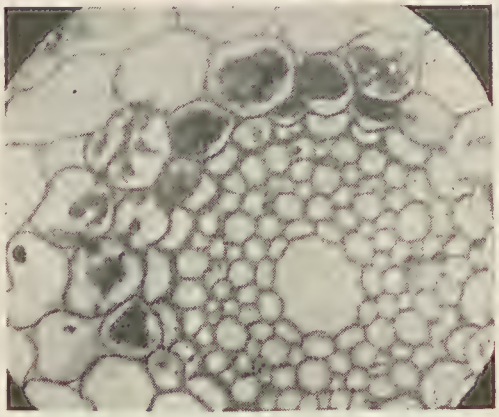

Fig. 12.—Transverse section through a main primary root of Mulga oats showing internal "blackening" along the length of the root. Note fungus mycelium occurring in cells just outside vascular area.

of the eelworm in combination with some nutritional defect not at present apprehended.

That a similar relationship holds with regard to the production of disease symptoms in cereals by *H. schachtii* is further supported by the fact that certain measures, such as mineral treatment, which were designed to effect an improvement in the nutritional relations of the plant, have, in certain instances at Nhill, resulted in a considerable improvement in growth and yield of wheat without having had any appreciable effect on the amount of eelworm infestation.

Resistance to Heterodera Schachtii.

The problem of the resistance of cereals to *H. schachtii* has been investigated along three main lines. The first two phases of the work were mainly conducted on an eelworm infested area at Nhill. The occurrence of resistance in certain types of cereals was confirmed by subjecting sowings in Nhill soil, at Burnley, to careful microscopic examination.

The pathological studies were also performed at Burnley.

Classification of Cereals in Accordance with their Resistance to H. schachtii.—During 1936 and 1937 approximately 200 different varieties of wheat, oats and barley, were classified in accordance with their resistance to *H. schachtii*. The varieties were sown in small drilled plots, two rows wide, at Nhill (Figs. 13 and 16) and observations were made during each season on their relative root growth, presence of eelworm cysts on the roots, and the occurrence of lesions caused by root rot fungi. Such an experiment was possible owing to the high natural infestation

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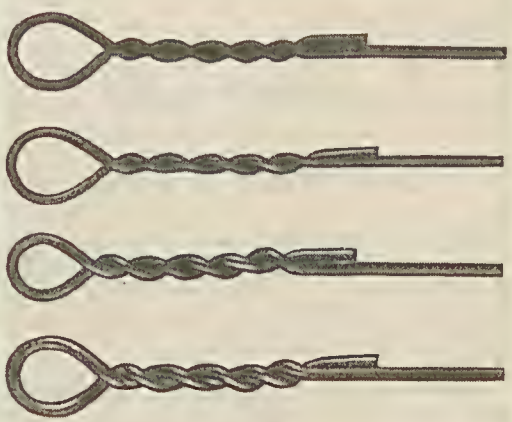

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of eelworms which occurs in the Nhill soil. The average number of cysts per 72 grams of soil was approximately 50. Goffart (14) considered six cysts per 100 grams of soil a heavy infestation.

A check of the natural infestation of eelworms was made by sowing Free Gallipoli wheat every tenth plot throughout the experiments. This variety, from previous observations, was known

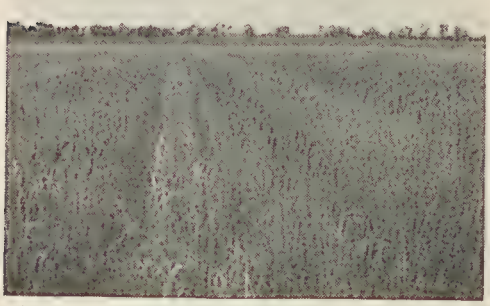

Fig. 13.—Showing small, two-row wheat plots used in resistance studies.

to be very susceptible to eelworm attack and was therefore very suitable for this purpose. Observations made on these check plots showed that the plants in all these rows were heavily attacked by eelworms, and that no apparent variation in infestation occurred through the areas devoted to these tests.

The first samples of plants were dug at the end of October, and were examined in the laboratory at Burnley for eelworm infestation, as judged by the occurrence of cysts on the roots. This time of the year was found to be ideal for obervations on eelworm infestation, as the cysts at that time were still white in colour, and were firmly embedded in the roots and therefore did not fall off when the roots of the plants were washed to remove the adhering soil. All varieties, which at these first examinations showed a low infestation, were resampled in mid-December and subjected to further careful examination in the laboratory. In addition, 40 different cereal varieties included in the above experiments were grown in Nhill soil in 8-in. flower pots in the greenhouse at Burnley, and were examined for eelworm infestation in August, eight weeks after germination. By this means the relative development of the worms to the early cystic stage in the different types of cereals was studied.

The most significant result of these tests was the discovery that different varieties of wheat, oats, and barley, do exhibit varying degrees of resistance to *Heterodera schachtii*. The oat varieties in particular, and the barley varieties to a lesser degree, showed this phenomenon to a greater extent than did the different varieties of wheat tested. Though no variety of wheat, oats, or barley was entirely immune to eelworm attack, on several varieties indicated hereunder the number of cysts produced was very limited.

With regard to the pea strain of *H. schachtii* a somewhat similar variation in resistance of pea varieties to the worm has been noted by Walton et al (45). Although most pea varieties are highly susceptible to this strain a few were noted which were somewhat resistant. Goffart (14, 15) however, was unable to find any marked difference in resistance between oat and potato varieties and the oat and potato strains of the worm respectively.

Following are the results of resistance studies conducted at Nhill and Burnley during 1936 and 1937.

WHEAT.—Wheat belonging to two different species, namely, *Triticum durum* and *T. vulgare* were tested. Cysts were produced on the roots of varieties belonging to both species, but the *T. durum* varieties were, on the whole, more resistant. In the case of wheat, infestation of the roots with eelworms produced a short, very branched root system due to the production of numerous starvation rootlets at the point of cyst development. The primary roots produced below the grain, in general, were attacked more freely than were the adventitious roots. Practically all the wheat varieties tested were attacked very freely by eelworms. Although some varieties are listed hereunder as possessing some resistance to attack, their degree of resistance was much less than that possessed by resistant types of oats listed later.

Susceptible to Very Susceptible.—Amity, Apollo, Baldmin, Baringa, Bena, Bencubbin, Bobin, Bordan, Cadia, Canberra x Hard Federation, Carrabin, Cedar, Comeback x Free Gallipoli, Cowhort, Currawa, Currawa x Major x Gallipoli, Dan, Dan x Rajah, Dundee, Duri, Duri Bari 19, Federation, Ford, Forex, Free Gallipoli, Free Gallipoli x Wannon (two crosses), Gallipoli x Graham, Geeralying, Ghurka, Ghurka Selections (4), Ghurka x C.M.G. (20 crosses), Gladys, Gluclub, Golden Grain x Bobs, Grasby 51 x Major, Gular, Hard Federation x Canberra, Ideal, Improved Gluyas x Ranee, Joffre, John Brown, Kubanka, Mac's White, Major, Major x Free Gallipoli (four crosses), Major x Ranee (three crosses), Mogul, Nabawa, Nizam, Noongaar, Omrah (Vand), Penny, Pusa 4, Rajah, Rajah x Gallipoli (two crosses), Ranee 4H,

Rance x Free Gallipoli (six crosses), Sepoy, Sepoy Selections (2), Sepoy x Dan, Sepoy x Free Gallipoli (six crosses), Sepoy x Nabawa, Sutton, Sword, Totadgin, Turvey, Waratah, Warden, Wardfir, Yandilla King and Yanward.

Possessing Some Resistance.—Indian Runner, Sepoy x Dan W5497 P3-3-2, and Huguenot. The root-systems of the two varieties Indian Runner and Sepoy x Dan were relatively unbranched, and in this regard were different from practically every other wheat variety studied.

During the progress of the above experiment root rot lesions occurred very commonly on the roots of the wheat plants. The following fungi were isolated from these lesions:—*Rhizoctonia solani*, *Curvularia ramosa*, *Curvularia* sp., *Helminthosporium sativum*, *Helminthosporium* sp., *Fusarium culmorum*, *Fusarium* spp., *Coniothecium* sp., *Macrosporium* sp., *Phoma* sp., *Pythium* sp. (Figs. 14 and 15), and *Pleosphaeria semeniperda*. No variety was entirely free from these lesions, but two Ghurka x C.M.G. crossbreds are worthy of note. Root rot lesions were apparently less prevalent on these crossbreds than on the roots of the majority of the other wheats. In addition, in mid-September, 1937, when growth as a whole was backward, they were outstandingly good in appearance, being darker green in colour and more vigorous than the other varieties. One of these was also outstanding at the same period in the experimental plots at Salisbury, where root rot damage was severe at this stage. Further evidence will be necessary to determine if these crossbreds do possess some root rot resistance.

Fig. 14.—Helminthosporium sp. isolated from lesions on wheat roots from Nhill.

Fig. 15.—Oospores of Pythium sp. on the roots of Burke oats. (Stained Fleming's solution 24 hrs.)

OATS.—Very marked differences in resistance to eelworm attack were exhibited by oat varieties included in the experiment. This result is apparently in marked contrast to European experience, where Goodey (16) states that "oats seem to suffer more regularly and severely than other cereals"; while Goffart (14) found that oat varieties are not widely different in susceptibility to the European oat strain. In the experiments at Nhill, wheat varieties have been consistently more severely attacked than either oats or barley. The differences in resistance were not related to specific differences between *Avena sativa* and *A. sterilis* types. It has been observed, however, that on the roots of *A. fatua* (wild oats) and two crosses with wild oats, cysts were exceedingly prevalent.

In the oat varieties studied, infestation with eelworms did not lead to a very branched root system, as occurred in wheat. The adventitious roots in particular seldom were very branched, even when heavily infested with cysts. On oat roots also, it was noted that the cysts were not sunken into the tissues of the roots to the same extent as they were in wheat and barley. The oat roots as a general rule were more strongly developed than those of wheat and had the appearance of being more woody.

As a result of the experiments, the oat varieties tested have been classified in accordance with their resistance to *Heterodera schachtii* as under:—

Resistant.—Gidgee, Guyra, Mortgage Lifter, and Mulga.

Moderately Resistant.—Algerian Selection P4, Dawn Selection W393 U1, and Kareela.

Susceptible.—Algerian, Algerian Selection P5, Belar, Buddah, Burt's Early, Burt's Early x Palestine, Dawn, Dawn Selection W398 U1, Fulghum, Imbros Island, Lachlan, Lincoln

Algerian, Lincoln Algerian B49, Palestine, Palestine x Belar, Palestine x Dawn, Palestine x Ruakura, Palestine Selections (2), Pride of York, Scotch Grey, and Sunrise.

Very Susceptible.—Burke, Early Kherson, Ideal, Richland, Wild Oats (*Avena fatua*), and Wild Oats x Ruakura x Kanota (two crosses).

Close examinations of plants of the Mulga variety grown on the experimental area at Nhill during the four seasons 1934 to 1937 have confirmed the resistance of this variety to eelworms. These observations have also been supported by rotational and other studies, reported later.

Oat varieties, including the resistant types listed above generally showed very poor growth when grown on wheat stubble in the Nhill district. As eelworms are not the limiting factor in the case of these resistant types, it seems evident that some other factor yet to be determined is responsible. Part of this poor growth may be attributed to the attack of root rot fungi. From lesions on the roots of oat plants the following fungi have been isolated:—*Rhizoctonia solani*, *Curvularia ramosa*, and *Fusarium* spp. In Fig. 12 the mycelium of a parasitic fungus is seen occupying the cells just outside the vascular area in a transverse section of a root of Mulga oats grown in Nhill soil. Macroscopically this specimen showed a longitudinal blackening of the tissue in this region.

BARLEY.—Both two-row and six-row types of *Hordeum vulgare* were included in the experiments, and in general no constant difference in reaction between the two types occurred. The resistance of certain barleys to eelworm was more outstanding than that of any wheat variety, but was not as great as that possessed by the resistant oat types. Branching of the roots occurred when attacked by eelworms, but this symptom was sometimes masked, as many barley varieties possess naturally very fibrous or branched root systems.

The barley root system was seen to be very different from that of wheat, in the occurrence of very many strongly developed adventitious roots. In addition, barleys generally send out five to seven primary roots from the grain as compared with three to four in wheat and oats.

As a result of these experiments the barley varieties tested have been classified as follows:—

Moderately Resistant.—Algeria V, Bay Brewing, Black Hull-less, Chevalier x Pryor, Deputy, Gisborne, Golden Grain, Orge 14 J, Pearl, Roseworthy Oregon x California Feed, Trabut, and Tunis.

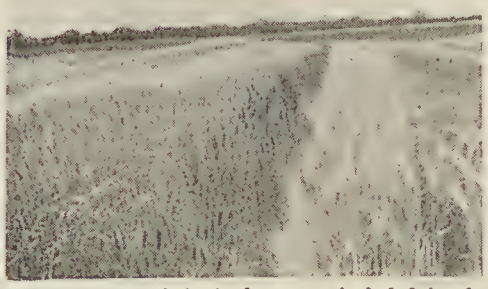

Fig. 16.—Some of the barley rows included in the resistance tests. Note the check plot of Free Gallipoli wheat.

Susceptible.—Cape, Chevalier, Duckbill, Goldthorpe Spratt, Oregon, Orge 4th, Plumage Archer, Primus, Pryor, Pryor x Plumage Archer (ten crosses), Pryor x G.R.M., Pryor x Tunis, Pusa 12 x Plumage Archer S2–1, Sea of Azov, Spratt Archer, and Trebi.

Very Susceptible.—Coast, Gatami, Kniver Chevalier, Pusa 12 x Plumage Archer S1–7, Sea of Azov x Roseworthy Oregon, and Satin.

Resistance of barleys to *H. schachtii* has been studied by Nilsson-Ehle (34), who found that different varieties exhibited great differences to nematode attack, and further, that resistance is inheritable and follows Mendelian laws of segregation in crosses, immunity being dominant. However, two of the varieties which he found to be resistant, namely, Chevalier and Primus, were tested in the above experiment and found to be susceptible to the form of the worm at Nhill. Edwards (6) has recommended the growing of resistant barley types in crop rotations, to control the oat race of *H. schachtii* in England.

In general, root rot lesions on the barleys were not as prevalent as on the roots of the wheat varieties studied. The following fungi were found to be associated with such lesions:—*Rhizoctonia solani*, *Helminthosporium* sp., *Fusarium* sp., and *Coniothecium* sp.

Estimation of the Comparative Effect of Resistant and Susceptible Types of Cereals on the Population of Eelworm Cysts in the Soil.—In conjunction with the classification of cereals for resistance to eelworms, experiments were conducted to determine the relative effect on soil population of varieties which were found to possess varying degrees of resistance to eelworms. In an experiment during 1935, drilled plots, seven rows wide and approximately 250 links long, of various types of wheat, oats, and barley were sown, and composite soil samples were obtained from them at the end of the season while the crop was still standing. This method

proved unsatisfactory, as it was found from a comparison of counts of soil samples obtained from the rotation experiment, before and after cultivation of the area, that a more reliable estimate of soil infestation was obtainable where the ground had been cultivated to break up root masses before sampling, than where soil samples were obtained from plots with standing crop. In addition it was not possible to obtain an estimate of the variance of the results. An indication was obtained, however, from the 1935 experiment that the soil population was greater following barley and wheat than following certain oat varieties.

A further experiment was laid down in 1937, following the 1936 observations on the resistance of cereals to *H. schachtii*. Each plot was 28 drill rows wide and 280 links long, and the varieties of wheat oats and barley selected are shown in Table II. The plots and paths were made sufficiently wide to ensure that there would be no appreciable movement of the soil from one plot to the next by implements during cultivation of the plots after cropping and before the final soil sampling of each was made.

In order that an estimate of the variance of the results could be obtained, every fourth plot throughout the experiment was sown with Free Gallipoli wheat. At sowing time soil samples were obtained from each plot to provide an estimate of the original soil population of eelworm cysts. Counts on these samples indicated that a small variation in cyst population from plot to plot occurred, with an average infestation for the whole area occupied by the experiment, of 38 cysts per 72 grams of soil.

Before the final sampling, at the end of the experiment, the area was cultivated to break up root masses and each plot was halved transversely and a composite sample of twelve borings, with a 1-in. diameter sampling tube to a depth of 4 inches, was obtained from each half. In the subsequent counts on these samples, it was found that very little variation in eelworm population occurred between the two samples obtained from any particular plot.

To eliminate the effect of variations in the original cyst population of the soil and make the differences between each plot due to crop treatment comparable, the differences between the original and final cyst population of each plot were obtained, and these differences were then re-calculated on the common basis of an average original population of 38 cysts per 72 grams of soil. The results are shown in Table II. An estimate of the variance of the results was obtained by analysing the figures for the Free Gallipoli check plots. It was assumed that the variance of the cyst-count figures obtained for the other cereals included in the experiment would be similar.

TABLE II.—COMPARATIVE EFFECT OF EELWORM RESISTANT AND SUSCEPTIBLE TYPES OF CEREALS ON THE POPULATION OF *Heterodera Schachtii*.

Note.—The results are expressed on the basis of an original soil infestation of 38 cysts per 72 grams of soil for each plot.

Variety.	Average Final Cyst Population per 72 Grams of Soil.
Wheat—	
Free Gallipoli	57·8
Mogul	49·5
Sepoy	26·5
Oats—	
Mulga	15·0
Guyra	15·0
Burke	40·5
Wild Oats x Ruakura x Kanota	57·0
Barley—	
Chevalier x Pryor	28·0
Trebi	29·5
Orge 4th	40·5
Duckbill	67·5

Standard Error (based on variance of Free Gallipoli check plots) = 5·09.

The outstanding results of this experiment were obtained with the oat varieties. The eelworm resistant varieties, Mulga and Guyra, caused marked decreases in cyst population, whereas the susceptible variety, Wild Oats x Ruakura x Kanota, in particular, resulted in a considerable increase in the number of cysts in the soil. The results confirm the observations recorded above that marked variations in resistance to eelworm infestation occur between oat varieties. Further evidence on the effect of the resistant Mulga oats in reducing soil population is contained hereunder in the report on the rotation experiment conducted at Nhill, in which this variety was included in 1937.

The barley varieties, with the exception of Duckbill, resulted in a smaller cyst population as compared with the Gallipoli wheat. The apparent reduction in cyst population from the original of 38 cysts per 72 grams of soil recorded for Chevalier x Pryor and Trebi, in this experiment, cannot be regarded as significant. In the case

of Chevalier x Pryor, however, confirmatory evidence of the reduction in cyst population resulting from the sowing of this variety as compared with Free Gallipoli wheat was obtained in the rotation experiment in 1937. In that year rotation No2a was sown to Free Gallipoli wheat and No2b to Chevalier x Pryor barley, and the resultant effects of these two cereals on cyst population (Table III.) were similar to those recorded in Table II.

A significantly lower cyst population was recorded for Sepoy as compared with the two other wheat varieties. In the resistance studies reported above, numerous plants of the Sepoy variety showed only a light infestation of eelworms, but as this was not a constant feature, this variety has been classed as susceptible. From the results of this experiment it would seem that Sepoy does possess some eelworm resistance when compared with Mogul or Free Gallipoli. The apparent reduction in cyst population recorded for this variety, however, cannot be regarded as significant.

Preliminary Studies on the Pathology of Eelworm Infestation in Resistant and Susceptible Plants.—In view of the discovery of eelworm resistance in certain oat varieties in particular, studies were initiated at the Plant Research Laboratory, Burnley, during 1937, to determine the nature of this resistance. The procedure adopted was to grow large numbers of plants of selected varieties of cereals and certain other species of plants listed hereunder, in wooden boxes and in glazed pots containing eelworm infested soil from Nhill. Samples of plants were taken seven days after germination and approximately every fortnight afterwards until the plants were sixteen weeks old. The soil was carefully washed from the roots of these plants, which were then placed in hot, slightly dilute, acetone, to kill the worms quickly in their natural position. The roots were left in the acetone for three hours and then washed in water, and transferred to Fleming's solution for 48 hours.

After washing in water, the roots were suitable for examination, as the eelworm larvae and developing worms were stained black, and were readily discernible in the white tissues of the root by means of a low powered dissecting microscope. This method of demonstrating parasitic nematodes in host tissue has been described by Godfrey (13). Portions of the roots which were selected for further microscopic examination were dehydrated, embedded in paraffin, sectioned with a microtome at 14μ, and stained with Fleming's triple stain. In certain instances, very satisfactory results were obtained by the use of lacto-phenol cotton blue.

It was immediately apparent that in the early stages of growth of the roots, the larvae of the form of *H. schachtii*, present in the Nhill soil, were capable of penetrating the roots of a wide variety of plants, which were not previously regarded as hosts for this strain of the worm. Large numbers of these different species of plants which were growing in an experimental area at Nhill, had been macroscopically examined in previous seasons without finding any evidence of cyst formation.

The species of plants on which cysts of the form of *H. schachtii*, present at Nhill, have been found are as follows :—

Triticum vulgare, T. durum, Hordeum distichon, H. vulgare, H. murinum, Avena sativa, A. sterilis, A. fatua, Lolium hybridrum, L. italicum, Bromus rubens, B. sterilis, Secale cereale, Phalaris canariensis, Sonchus asper, Trifolium resupinatum, and *Pisum arvense.* The species other than wheat, oats and barley,

Fig. 17.—Showing larvæ of H. schachtii *in the roots of* Medicago denticulata. *(Stained Fleming's solution 48 hours.) Note root nodule.*

generally, were lightly infested only by cysts of *H. schachtii*, and on the last three named species of plants in the above list, only an occasional cyst was found. Flax (*Linum usitatissimum*) was grown on an infested area at Nhill, but no cyst production on the roots was observed.

In addition to these plants, larvae have been found in the young roots of the following species of plants grown in Nhill soil at Burnley:—*Solanum tuberosum, Lithospermum arvense, Capsella bursa-pastoris, Carduus lanceolotus, Medicago denticulata, Papavera dubium,* and *Brassica sinapistrum.* Sections of the roots of certain of these plants (Figs. 17 and 18) showed that the larvae penetrated the tissues as far as the endodermis. No development of the larvae in the roots of these plants occurred and the worms, in many instances, disintegrated within the root after several weeks and took on a "ghost" like

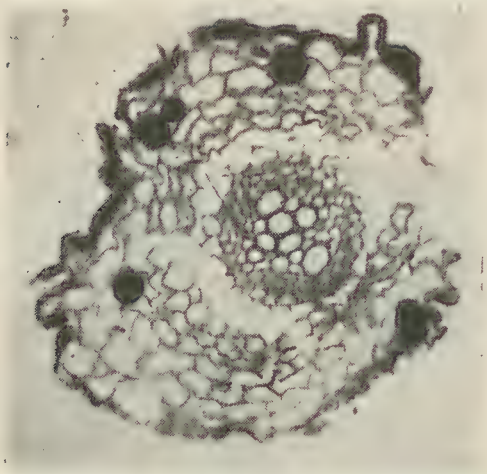

Fig. 18.—Transverse section of young root of Lithospermum arvense (iron weed) showing the presence of larvæ of H. schachtii *in the tissues.*

appearance when stained in Fleming's solution. The roots of the plants at this stage were very tough and wiry in appearance.

Goodey (16) has stated that the larvae of the oat race of *H. schachtii* will enter the roots of certain plants belonging to *Chenopodiaceae, Cruciferae* and *Caryophyllaceae,* but that they do not appear able to reach sexual maturity in them. Goffart (14) was also able to induce the oat race to produce cysts on red clover roots. Cysts on the roots of leguminous and composite plants have been found occurring naturally in the field at Nhill.

The entrance and subsequent death of the larvae in the roots of "non-susceptible" plants, which commonly occur as weeds in the field at

Fig. 19.—Showing free occurrence of larvæ of H. schachtii *in the young primary roots of Ford wheat at three weeks.*

Nhill, would account for the reduction in soil population which occurred in certain treatments in the rotation experiment at Nhill, where these plants were included. Triffitt has shown also, that the root secretions of such non-susceptible plants stimulate the hatching of cysts of the potato strain of *H. schachtii.*

With regard to the cereals, an examination of the roots of the young plants showed that the number of larvae entering the roots of wheat was considerably greater than those entering the roots of oats and barley (Fig. 19). The large majority of these larvae fail to develop to the cystic stage. No differences in the number of larvae entering the young roots were noticeable between the eelworm resistant and eelworm susceptible types. It was found, particularly with barley and oats, that development to the cystic stage seldom occurred in the main primary roots sent out from the grain, but in the branches

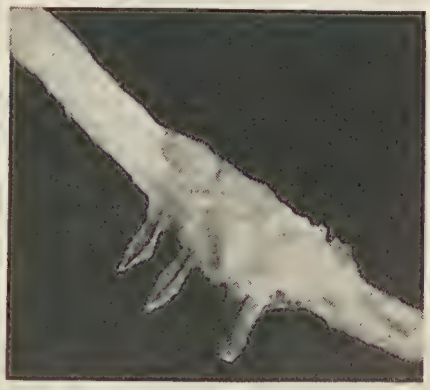

Fig. 20.—Eelworm infestation of a susceptible oat variety. Two fully developed cysts occur on the opposite side of the root to the secondary roots. A developing larva occurs in the root tip of each of these rootlets.

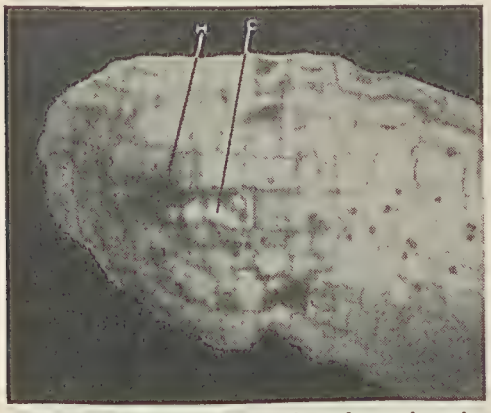

Fig. 21.—Longitudinal section through root tip region of susceptible oat variety soon after penetration yb larvae. Head of parasite (H) situated in plerome near beginning of region of elongation. Content of cell (C), in immediate contact with head of larva, removed by parasite.

of the main roots. In these main roots the larvae were seen to disintegrate and exhibit the phenomenon of "ghost" staining.

In general, development of the worms to the cystic stage occurred most rapidly in wheat. At six weeks after germination the difference between the development of the larvae in the resistant and susceptible oat varieties became noticeable macroscopically. Swelling of the larvae in the root tips of the susceptible varieties was first noticeable at this stage (Fig. 20) whereas no development of larvae had occurred in the roots of the resistant Mulga oats at the end of sixteen weeks.

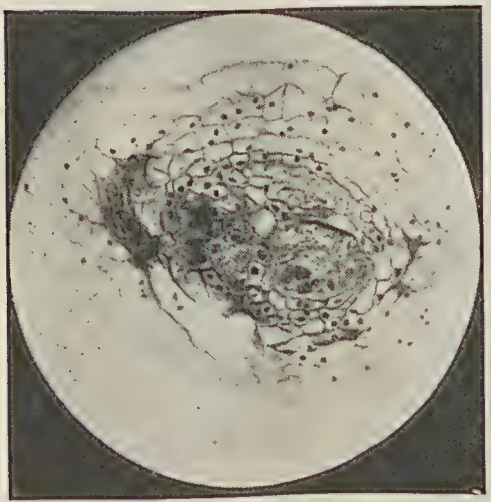

Fig. 22.—Transverse section through root tip region of rootlet of Burke oats containing a developing larva similar to those shown in Fig. 20. Position of larva seen on left of vascular area.

The larvae enter the roots between the cells so that little damage to the tissue occurs until development of the worm commences. In the susceptible types the parasite commences to develop in the root-tip regions of the plant. The head of the worm is usually located in the plerome, near the beginning of the region of elongation, and the body extends in the root tissue parallel to the length of the root. One or two days after the entry of the worm the cells in immediate contact with its head become ruptured and their contents are used as food by the parasite (Fig. 21).

Shortly afterward, the cells of the central cylinder, near the head of the worm, enlarge, and the cell walls disintegate, leading to the production of giant cells and syncytia. These cells are multinucleate and rich in granular

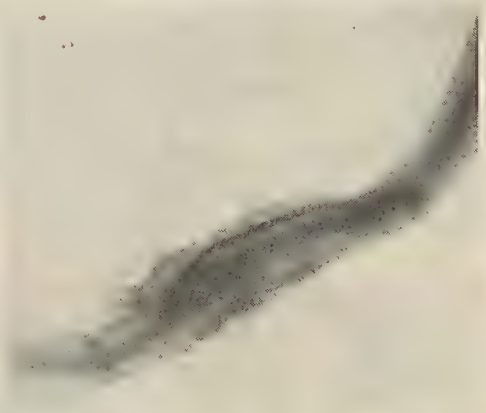

Fig. 23.—Developing larva in the root of Duckbill barley. Note swelling of root at point of attack.

protoplasm (Fig. 22). In the older roots the cell walls of the giant cells become thickened and push aside the vascular elements. The root itself often increases in diameter at the point of attack (Fig. 23). This was particularly the case with certain barleys.

While the nematode is still partly developed only, its body becomes free from the root and it remains attached only by its head end (Figs. 24 and 25A). Sections of the roots of the Ford wheat variety at this stage showed that the giant cells only occur in the region of the head of the worm (Fig. 25).

In wheat and barley and much less commonly in oats, the production of lateral roots commences at this stage (Figs. 26 to 28). Duckbill barley apparently reacts much more rapidly to the presence of developing worms in the production of lateral roots than the other barley varieties

which were studied. Large syncytia occur only at the head end of the parasite in this variety. Outgrowths of small celled parenchyma are produced by the division of the pericycle, and

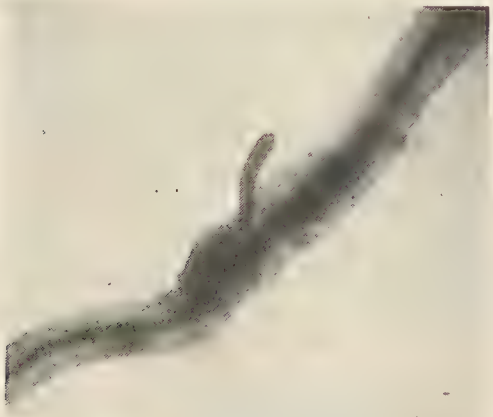

Fig. 24.—Partly developed worm in root of Burke oats, showing thickening at the point of attack and absence of secondary roots.

these give rise to the lateral roots (Fig. 29). These changes give rise to the very branched root systems which result from eelworm infestation of wheat and barley in particular (Fig. 8).

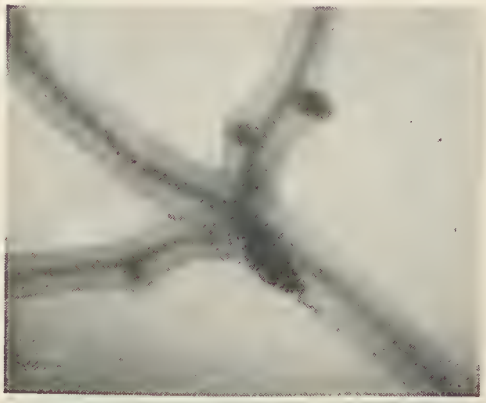

Fig. 26.—Partially developed female worm on root of Free Gallipoli wheat showing beginning of secondary root formation. (Root tips stained black Fleming's solution 48 hours.)

Similar plant reactions due to infestation by *H. schachtii* and *H. marioni* have been recorded by Goodey (17), Christie (4), and others. According to them, these reactions are probably due to the stimulatory action of some secretion expelled through the mouth of the worm. Lingford (29) has shown that some mechanical injury is caused by the stylet of the larvae. The syncytia are assumed by Nemec (33) to be nectary like in function.

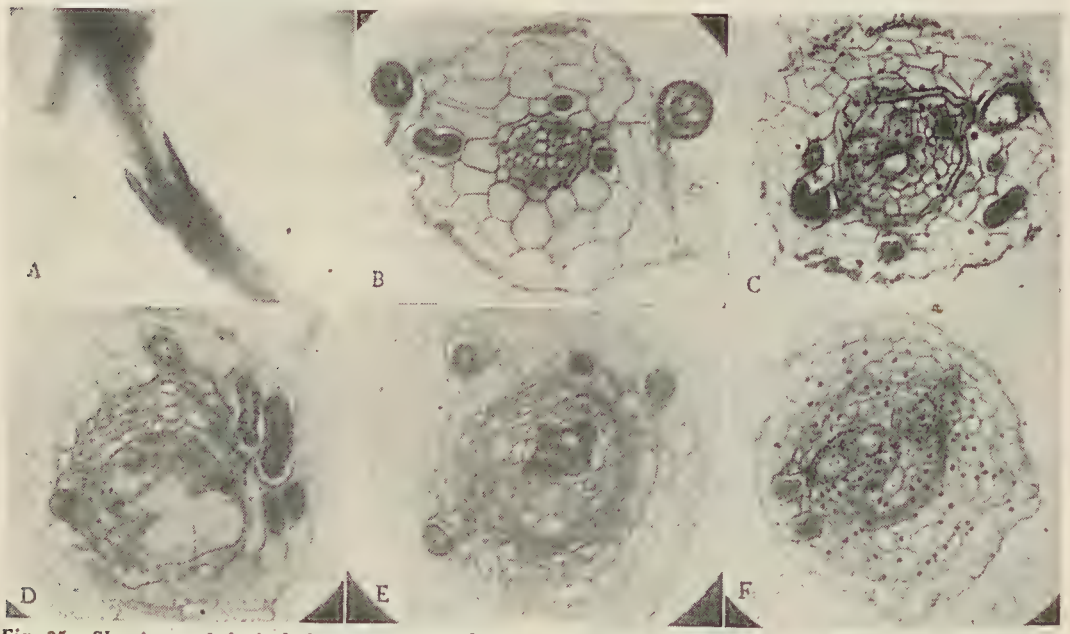

Fig. 25.—Showing pathological changes in Ford wheat due to eelworm infestations. A. Before sectioning. B. to F. Sections progressing towards head ends of developing worms. C. First signs of giant cell production in vascular area. D. Large syncytia occupy practically whole of vascular area. E. Elements of vascular bundles are displaced by giant cells, showing pitted sides of conducting vessels. F. Heads of larvae do not penetrate vascular bundle.

Fig. 27.—Secondary root formation in Free Gallipoli wheat associated with partially developed female worm. Later stage than Fig. 26.

Fig. 28.—Secondary root formation in Duckbill barley. The wormlike parasite is not visible in this illustration.

Sections of roots of the resistant Mulga oat variety containing undeveloping larvae have not revealed the occurrence of giant cells. It was seen that the differentiation of the vascular elements in the root tips of this variety occurred much sooner than in the susceptible oat varieties (Fig. 30). It seems very probable that the basis

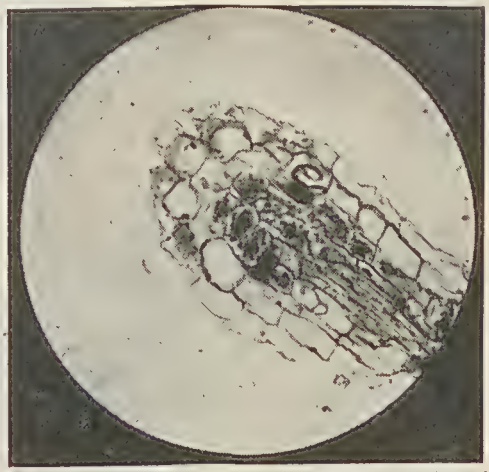

Fig. 30.—Longitudinal section through tip region of a Mulga oat root showing the rapid differentiation of the vascular elements. An undeveloped larva and mycelium of an undetermined fungus occur under epidermis.

of the resistance of the Mulga variety is associated with this difference in the rate of differentiation in the two types of oat varieties, as the fact that the development of larvae commences in the young root tissues only, would indicate that the

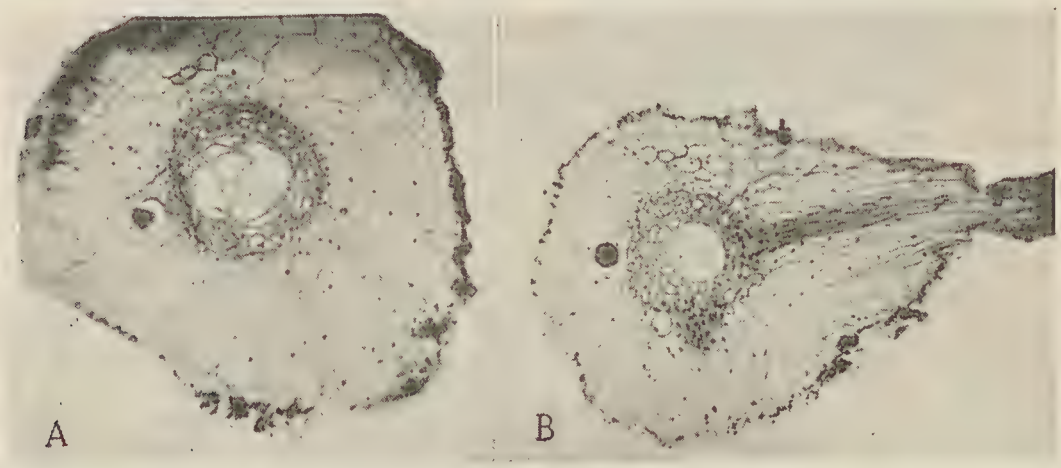

Fig. 29.—Transverse sections through a root of Duckbill barley containing a partially developed worm associated with secondary root formation. A. Section through head of worm situated outside vascular area and showing large syncytia in centre of vascular bundle. B. Section away from head of worm showing the absence of giant cells and outgrowths of small cell parenchyma from the pericycle leading to the production of lateral roots.

"woodiness" of the root is a factor concerned with the resistance of the plant to attack. In addition, the roots of the "non-susceptible" plants listed above as being penetrated by nematode larvae, became hard and woody very quickly, which fact would help to inhibit the development of the worm in them.

In one instance sections of a main primary root of Mulga variety containing a slightly developed worm, were made. In this specimen the worm was lying parallel with the length of the root and just outside the vascular area. At the head end of the worm it was noticed that the cells of the vascular tissue had been disrupted, due apparently to the feeding of the parasite (Fig. 31). No nuclei or cell walls occurred in this area which was not typical of the giant cells produced in the susceptible oat varieties. The development of the worm in this instance had evidently ceased as the plant was eleven weeks old at the time of examination. In addition, no cyst formation had been observed in the main primary roots of Mulga oats. The woodiness of these roots would be an important factor in inhibiting the development of the worms. If the larvae induce plant reactions in the form of giant cells, &c., as a result of the secretion of some toxic or irritant substance, it would seem evident that the resistant types possess some means of counteracting this secretion.

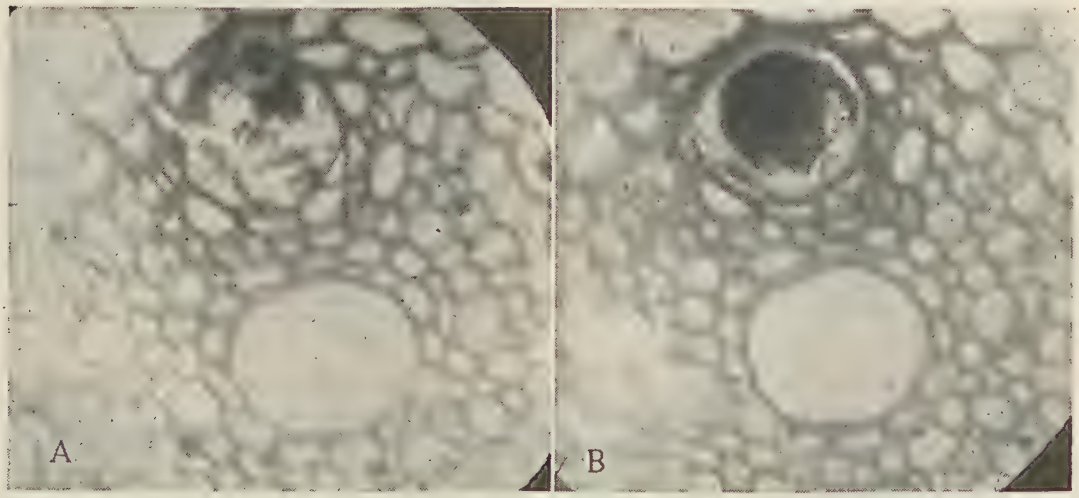

Fig. 31.—Transverse sections through head region of a slightly developed larva in a main primary root of a resistant Mulga oat plant 10½ weeks after germination. A. End of head of larva is lying just outside vascular area. An atypical "giant cell" occurs in vascular area. B. Next section past head of worm showing the giant cell.

Book Review

"Insects of Citrus and other Subtropical Fruits." By Henry J. Quayle. (Comstock Publishing Co. Inc., Ithaca, New York, 583 p.p. 5 dollars.)

CITRUS growers in this State have, for many years, been suffering, severely at times, from the attacks of insects, both on the fruit and on the tree. Of especial interest to them has been the development of improved methods of control of these pests, particularly of the citrus red scale. While possessing local knowledge of the problem, they have always shown a desire to learn more of the problem in overseas countries, particularly any improvements that have been suggested in control methods. This information in the past has not always been easy to obtain. Dr. Quayle, the well-known authority on the subject of citrus and other fruit insects, has admirably, and in a manner not previously attempted, compiled in this new book, information from all sources dealing with all angles of the many problems with which growers of these fruits are confronted. This book should be of great value to practical fruit growers, to entomologists and to those advisory officers who require practical and specific directions for the control of the many pests with which this phase of the horticultural industry is concerned.

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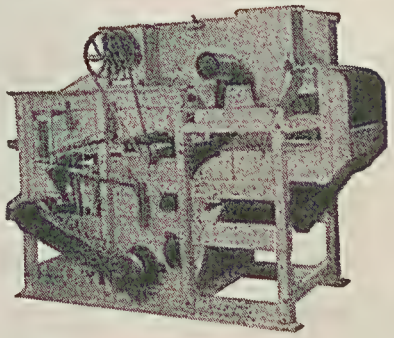

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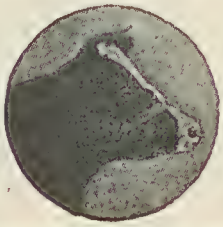

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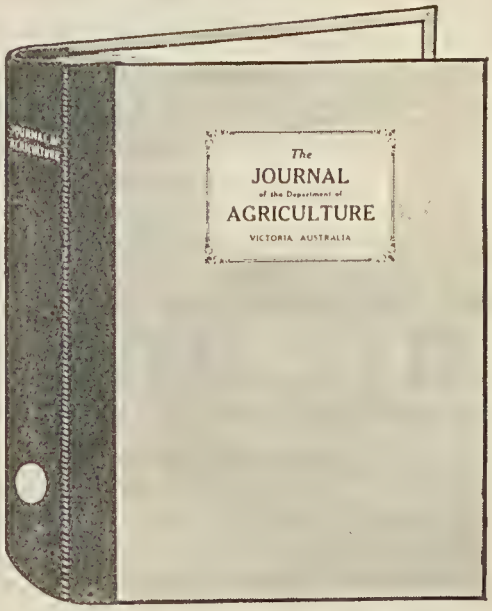

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Victoria Majesty has produced 311 lb. butter-fat in 273 days.

No. 2. VICTORIA KING PETER. (AA. C.R.) Born 4th February, 1937.. *Price* 25 guineas
Sire: Woodburn Peter Pan (1504 AA) (Imp. in utero). *Dam:* Victoria May Queen (3514 AA). f.o.r. Werribee
Victoria May Queen produced 366 lb. butter-fat in 273 days as Sr. 3.

No. 3. VICTORIA BONDMAN. (A. C.R.) Born 31st May, 1937 .. *Price* 17 guineas
Sire: Chandpara Valentine (762 AA). *Dam:* Victoria Bodkin (6010 A) f.o.r. Werribee.
Victoria Bodkin has produced 271 lb. butter-fat in 273 days as Jr. 3.

No. 4. VICTORIA ARMOUR. (A. C.R.) Born 15th December, 1937 *Price* 15 guineas
Sire: Chandpara Valentine (762 AA). *Dam:* Victoria Amaranth (3006 A). f.o.r. Werribee
Victoria Amaranth has produced 354 lb. butter-fat in 273 days.

No. 5. VICTORIA HERON. (A. C.R.) Born 20th April, 1938 .. *Price* 13 guineas
Sire: Chandpara Valentine (762 AA). *Dam:* Victoria Avrette (3893 A). f.o.r. Werribee
Victoria Avrette produced 349 lb. butter-fat in 273 days

No. 6. VICTORIA MARTYR. (A. C.R.) Born 14th June, 1938 .. *Price* 11 guineas
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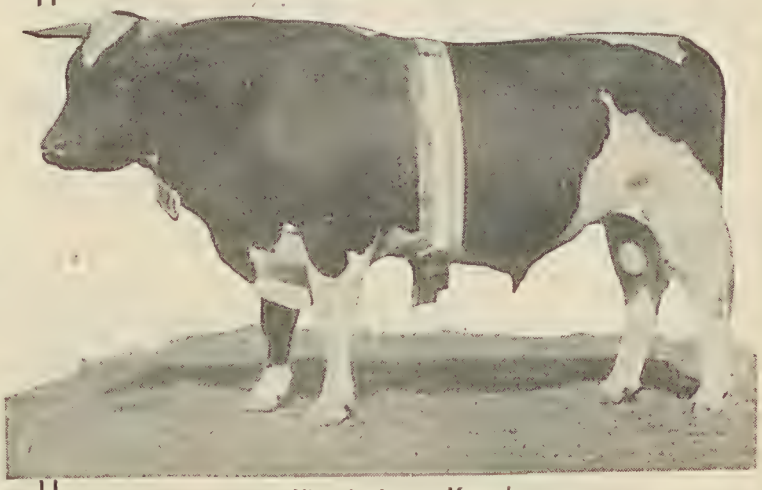

Victoria Joyous Mercedes

Dam:
Victoria Joybell, produced 15,387 lb. milk, 3·67 % test, 565 lb. butter-fat in 273 days, twice-a-day milking.

Daughters:
His eight (8) first-calf daughters have averaged 9,930 lb. milk, 3·73 % test, 370 lb. butter-fat in 273 days on first lactations.

INSPECTION -- INVITED --

1. VICTORIA EMPEROR (C.R.) *Born 11th March, 1938*
Sire: Victoria Mikado (New Vol.) *Dam:* Victoria Woodcrest Daisy (5112)
Victoria Woodcrest Daisy has produced 425 lb. butter-fat in 273 days as Jr. 4.
Price: **13 guineas** f.o.r. Werribee

2. VICTORIA BULLSEYE (C.R.) *Born 23rd June, 1938*
Sire: Victoria Viscount (Vol. 14) *Dam:* Victoria Oxeye (Vol. 14)
Victoria Oxeye is on her first lactation.
Her dam produced 425 lb. butter-fat in 273 days as Jr. 4.
Price: **10 guineas** f.o.r. Werribee

3. VICTORIA DANCING LAD (C.R.) *Born 4th July, 1938*
Sire: Victoria Mikado (Vol. 14) *Dam:* Victoria Dancing Girl (Vol. 14)
Victoria Dancing Girl produced 435 lb. butter-fat in 273 days as Jr. 3.
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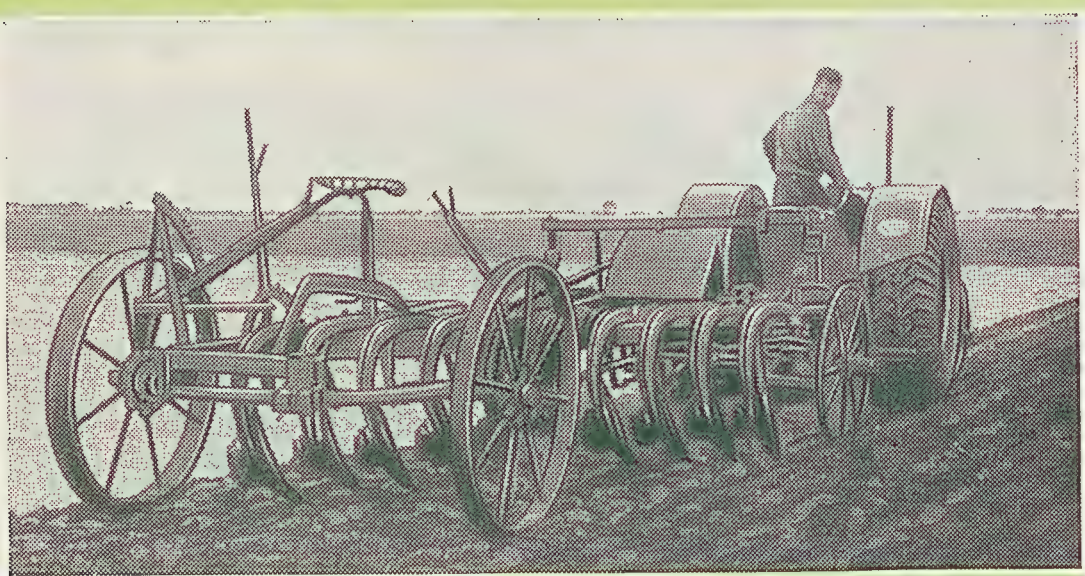

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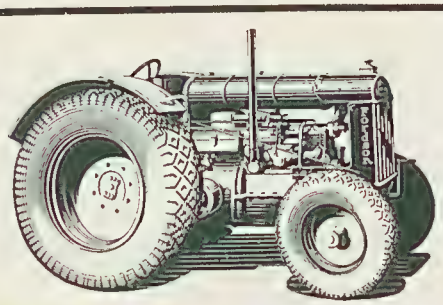

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VICTORIA, AUSTRALIA

STANDARD HERD RECORDS

For Quarter Ending June, 1938

Supplement to the *Journal of Agriculture, Victoria,* September, 1938.

10184.

Standard Herd Records

For Quarter ended 30th June, 1938

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 676, of which 530 qualified for the certificate. The figure in brackets after the owner's name shows the number of entries.

The amount of butter fat required for qualification varies with the age class to which the animal belongs, the standard being as follow:—

Junior 2 year old (under 2½ years at time of calving)	230 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving) ..	250 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving) ..	270 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving) ..	290 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving) ..	310 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving) ..	330 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

(Except where otherwise stated, the period of test was 273 days.)

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Alston, N. B., Romsey, Jersey (3).										
Rosyth Gay Bonnie ..	59331	12.9.37	9½	4,585	5·72	262·49	250	Sr. 2	209 ..	Werribee Gaypiece
Rosyth Gay Rosebud ..	Vol. 25	28.8.37	10	4,503	5·25	236·52	230	Jr. 2	.. ..	Werribee Gaypiece
Wompini King's Bell ..	Vol. 25	20.9.37	9	4,647	5·62	261·13	230	Jr. 2	.. ..	Wompini Erl King
Atkinson, W. K., Swan Hill, Dairy Shorthorn (14).										
Willow Park Camelia 11th	D.S.H.B.	29.7.37	21	9,954	3·86	384·38	290	Sr. 3	258 ..	Willow Park Silvermine 4th
Willow Park Comet 9th ..	D.S.H.B.	11.9.37	15	9,843	4·03	397·16	350	Mature	343, 360, 406	Willow Park Imperial 3rd
Willow Park Dainty 4th ..	D.S.H.B.	9.8.37	28	10,931	4·09	446·78	350	Mature	333, 385, 307, 438	Willow Park Eminent
Willow Park Dainty 5th ..	D.S.H.B.	25.9.37	20½	11,301	3·95	446·78	350	Mature	374, 473, 510, 546, 502	Willow Park Banker 2nd
Willow Park Damsel 5th ..	D.S.H.B.	20.9.37	11	9,045	3·74	338·35	250	Sr. 2	243 ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Duchess 23rd ..	D.S.H.B.	3.9.37	26	11,084	4·06	450·31	330	Sr. 4	332, 359 ..	Willow Park Silvermine 4th
Willow Park Fairy 5th ..	D.S.H.B.	4.9.37	24	12,362	3·56	439·79	350	Mature	301, 359, 400	Willow Park Eminent
Willow Park Fairy 10th ..	D.S.H.B.	5.7.37	17	7,122	3·78	268·95	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Melba 11th ..	D.S.H.B.	17.8.37	25	11,912	4·04	481·00	330	Sr. 4	342, 375, 369	Willow Park Imperial 3rd
Willow Park Melba 22nd ..	D.S.H.B.	25.9.37	8½	9,759	3·72	362·77	270	Jr. 3	328 ..	Willow Park Lustre 3rd
Willow Park Melba 23rd ..	D.S.H.B.	2.9.37	7	7,316	4·02	294·03	250	Sr. 2	221 ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Moss Rose 3rd	D.S.H.B.	22.7.37	20	10,455	3·58	374·34	350	Mature	361, 355, 446, 386, 490, 419	Willow Park Reflector
Willow Park Moss Rose 9th	D.S.H.B.	3.8.37	43	15,153	3·69	558·41	330	Sr. 4	414, 515 ..	Willow Park Reflector
Willow Park Rosebud ..	D.S.H.B.	14.9.37	18	6,504	3·70	240·57	230	Jr. 2	.. ..	Steventon Forester
Austin, F., Lara, Jersey (6).										
Avalon Gladstar's Daisy 3rd	51553	12.7.37	18	6,927	5·71	395·51	270	Jr. 3	.. ..	Avalon Gladstar 2nd
Avalon Mercedes' Pansy 6th	28405	24.8.37	12½	7,103	4·66	330·80	350	Mature	397, 413, 484, 417, 440	Mercedes Chief of Glen Iris
Avalon Noble's Pansy 11th	47061	19.9.37	14½	5,493	5·76	316·55	310	Jr. 4	236 ..	Noble of Avalon
Avalon Starbright's Beauty	51560	8.8.37	19	7,766	5·84	453·31	250	Sr. 2	.. ..	Brucevale Lord Starbright 3rd
Avalon Starbright's Duchess 2nd	51561	25.8.37	18½	7,854	5·13	403·18	250	Sr. 2	.. ..	Brucevale Lord Starbright 3rd
Avalon Starbright Pansy 6th	56191	7.8.37	19½	6,494	5·52	358·36	230	Jr. 2	.. ..	Brucevale Lord Starbright 3rd
Ballarat Orphanage, Ballarat, Jersey (14).										
Argyle Princess	33179	24.8.37	14	6,551	5·18	341·02	350	Mature	.. ..	Audrey's Prince of Banyule
Banyarra Aria 2nd ..	47113	16.8.37	16	6,998	5·76	403·33	290	Sr. 3	274, 429 ..	Retford King Bracken
Delmont's Delight ..	39508	8.8.37	19	10,701	5·11	546·81	350	Mature	503, 361 ..	Air Poise of Banyule
Orphanage Attraction 3rd	41396	20.8.37	20	7,164	5·08	364·28	350	Mature	274, 425 ..	Orphanage Quicksand Prince
Orphanage Attraction 8th ..	51571	15.8.37	18½	6,696	4·95	331·23	290	Sr. 3	333 ..	Jerseylea Quality Boy
Orphanage Attractive 3rd ..	41397	12.8.37	18	9,636	4·71	453·93	350	Mature	253, 410 ..	Orphanage Quicksand Prince
Orphanage Audrey's Molly 4th	54573	22.7.37	16	7,857	4·74	372·27	330	Sr. 4	393 ..	Murona Airmine
Orphanage Doris 3rd ..	49968	12.7.37	14	8,225	4·28	352·14	330	Sr. 4	352 ..	Murona Airmine
Orphanage Garenne 6th ..	54577	23.8.37	16½	6,519	5·78	376·91	290	Sr. 3	336 ..	Jerseylea Quality Boy
Orphanage Mannikin's Attraction	32931	24.9.37	25	8,552	5·62	480·59	350	Mature	260, 470, 358	Audrey's Prince of Banyule
Orphanage Molly 4th ..	58822	23.8.37	10½	4,653	5·70	265·28	290	Sr. 3	358 ..	Jerseylea Quality Boy
Orphanage Pearl 5th ..	41409	14.8.37	12½	7,664	5·06	387·96	350	Mature	252, 419 ..	Orphanage Quicksand Prince
Orphanage V.C.'s Molly 4th	58829	25.8.37	10½	4,403	5·21	229·23	230	Jr. 2	.. ..	Rowallan Celebrity
Orphanage Zaffarine 4th ..	49978	24.9.37	8½	6,139	5·63	345·71	350	Mature	365 ..	Jerseylea Quality Boy

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Bassett-Smith, C., Kyabram, Red Poll (4).										
Kyvale Fairy	5525AA	1.9.37	17	6,468	4·17	269·42	230	Jr. 2	.. ..	Temperley Dairyman
*Temperley Air Plane ..	2988A	13.9.37	4	7,305	4·27	311·69	350	Mature	280, 307, 284, 312, 318	Corriedale Royal Favourite
†Temperley Pippin ..	A.A.C.R.	11.9.37	..	3,450	4·35	150·06	250	Sr. 2	.. ..	Temperley Dairyman
Temperley Sweet Pear ..	4503AA	11.7.37	20	7,982	3·73	298·01	350	Mature	191, 260, 274, 316	Earl of Beaconsfield
Bigger, R., Monomeith, Jersey (2).										
Neagh Lena	33413	21.7.37	10	6,142	5·59	343·23	350	Mature	.. ..	Choirmaster of Banyule
Waiora Park Carita ..	51056	15.9.37	10½	6,221	5·68	353·33	310	Jr. 4	358 ..	Glenavon Diana's Prince
Black, Mrs. A. J., Noorat, Jersey (1).										
Noorat Sundew 2nd ..	58740	16.8.37	12½	5,231	5·45	285·34	230	Jr. 2	.. ..	Noorat Guarantor
Black, I. S., Noorat, Ayrshire (3).										
Mount Noorat Alert ..	24144	4.8.37	16	8,334	4·28	357·10	350	Mature	295, 385, 356, 328	Scottish Major of Gowrie Park
Mount Noorat Alert 5th ..	29775	27.7.37	12½	6,755	4·48	302·29	230	Jr. 2	.. ..	Gowrie Park Scottish Patron
Mount Noorat Georgina 5th	29777	1.8.37	21	8,582	4·42	379·32	230	Jr. 2	.. ..	Gowrie Park Scottish Patron
Box, Estate of Late Dr. J., Whittlesea, Jersey (9).										
Bellefaire Blonde's Beatrice	47185	31.8.37	16	6,392	4·67	298·34	350	Mature	297, 380, 350	Napoleonette's Golden Oxford
Melrose Handsome Girl 18th	49481	13.7.37	8½	4,190	6·02	252·19	330	Sr. 4	301, 311 ..	Melrose Gold Reef
Toorongo Epacris 2nd ..	C.R.	19.7.37	15½	5,539	5·18	287·04	230	Jr. 2	.. ..	Toorongo Belle's Bonaparte
Toorongo Handsome Girl ..	C.R.	23.8.37	10	4,308	5·49	236·42	230	Jr. 2	.. ..	Toorongo Belle's Bonaparte
Toorongo Lydia 3rd ..	C.R.	13.7.37	8	4,125	5·93	244·41	250	Sr. 2	.. ..	Toorongo Belle's Bonaparte
Toorongo Pet	42208	12.9.37	14½	7,178	5·87	421·42	350	Mature	284, 301, 365, 430	Kantara Don Juan
Toorongo Postmaster's Queen	C.R.	5.9.37	10	4,785	6·52	312·14	290	Sr. 3	234 ..	Bellefaire Postmaster's Postmark
Toorongo Princess Millicent	42270	19.7.37	13½	6,603	5·91	390·69	350	Mature	284, 370, 399	Toorongo Maori Chief
Toorongo Queen	C.R.	17.7.37	11½	4,975	5·39	268·28	250	Sr. 2	.. ..	Toorongo Belle's Bonaparte
Broad, Estate of Late A. A., Sutton Grange, Jersey (6).										
Grangelea Bell	40060	9.9.37	19	7,283	6·01	437·53	350	Mature	302, 328, 411, 436	Grangelea Daffodil's Airo
Grangelea Bunty 8th ..	57534	10.9.37	15	4,920	5·24	258·05	230	Jr. 2	.. ..	Banyule Macon
Grangelea Dora	57537	1.9.37	14	5,748	5·30	304·84	250	Sr. 2	.. ..	Clarendon Eyre Eminent's Ruddigore 3rd
Grangelea Rose 7th ..	57546	10.9.37	16	5,027	4·89	245·96	230	Jr. 2	.. ..	Banyule Macon
Grangelea Rosella 3rd ..	48528	1.9.37	14	6,705	5·61	376·37	310	Jr. 4	319, 418 ..	Banyule Macon
Grangelea Rosette ..	57550	8.9.37	19	5,826	5·07	295·36	230	Jr. 2	.. ..	Grangelea Daffodil's Airo
Butcher, F. T., Swan Hill, Red Poll (3).										
Maryville Ena	3135B	18.8.37	19	7,538	4·31	325·16	350	Mature	290 ..	Victoria Vice King
Maryville Esther	4740A	29.8.37	10	6,234	4·19	261·23	250	Sr. 2	.. ..	Chandpara Ferdimand
Maryville Primrose ..	6208D	17.7.37	17	6,692	3·71	248·40	230	Jr. 2	.. ..	Chandpara Ferdimand
Calf, A. J., Werribee South, Jersey (4).										
Illillouette Aristocrat's Countess	C.R.	2.7.37	17½	6,327	5·44	344·16	230	Jr. 2	.. ..	Illillouette Carilla's Aristocrat
Illillouette Bing Boy's Tangerine	48745	22.8.37	22½	8,882	4·75	421·70	330	Sr. 4	313, 432 ..	Clarendon Eyre Eminent's Bing Boy
Springvale Countess 2nd ..	46162	17.8.37	19	8,699	5·03	437·96	350	Mature	320, 346, 468	St. Alban's Thelma's King 2nd
Springvale Countess 4th ..	59468	16.8.37	20½	7,406	5·50	407·10	270	Jr. 3	315 ..	Leura Choir Boy
Chadderton, J. E., Hamilton, Jersey (4).										
Glen Leigh Damsel ..	52821	4.9.37	12	6,281	5·64	354·31	250	Sr. 2	299 ..	Glen Leigh Bounty
Glen Leigh Daphne ..	48263	31.8.37	12	6,369	5·37	342·20	250	Sr. 2	335 ..	Glen Leigh Bounty
Glen Leigh Destiny 2nd ..	43973	29.6.37	16½	7,014	6·01	421·77	310	Jr. 4	354, 381 ..	Glen Leigh Bounty
Glen Leigh Dolly 2nd ..	48266	2.9.37	12	6,671	5·15	343·71	270	Jr. 3	294 ..	Glen Leigh Bounty
Chirnside, R. M., Whittlesea, Jersey (14).										
Mornmoot Fancy Madeira 5th	54246	24.7.37	9½	5,639	6·09	343·67	230	Jr. 2	.. ..	Werribee Warrior
Mornmoot Fancy Starbright	45256	7.7.37	21½	9,513	6·10	582·38	310	Jr. 4	396, 624 ..	Werribee Prince Madeira
Mornmoot Northwood Madeira	33142	25.9.37	10	9,359	5·71	534·27	350	Mature	381, 471, 605, 589, 643	Werribee Prince Madeira
Mornmoot Northwood Madeira 2nd	37070	4.8.37	22½	10,305	5·25	540·62	350	Mature	421, 404, 555	Werribee Prince Madeira
Mornmoot Northwood Madeira 4th	45267	23.8.37	22	8,879	6·18	548·86	310	Jr. 4	474, 603 ..	Werribee Jupiter
Mornmoot Princess Madeira 3rd	45269	9.8.37	35	12,339	5·94	733·52	330	Sr. 4	551, 721 ..	Staghorn Larkspur's Majestic
Mornmoot Princess Madeira 5th	49660	16.9.37	23½	8,892	6·24	554·87	290	Sr. 3	429, 571 ..	Werribee Jupiter
Mornmoot Princess Madeira 7th	54251	25.8.37	23	8,273	5·46	451·93	230	Jr. 2	.. ..	Werribee Warrior
Mornmoot Satisfaction ..	45270	9.7.37	17	8,723	5·63	491·53	310	Jr. 4	370, 519 ..	Werribee Prince Madeira
Mornmoot Satisfaction 3rd	54253	1.8.37	20	7,655	4·97	380·50	230	Jr. 2	.. ..	Werribee Madeira's Ace
Mornmoot Starbright 2nd	54254	13.8.37	11	5,612	5·68	318·61	230	Jr. 2	.. ..	Werribee Prince Madeira
Mornmoot Starbright 3rd ..	54255	18.7.37	13½	6,929	5·33	369·08	230	Jr. 2	.. ..	Werribee Warrior
Werribee Mimi	33118	24.9.37	28	11,103	5·78	646·94	350	Mature	598 ..	Werribee Grandmaster
Werribee Princess Satisfaction	28543	14.8.37	23½	10,967	5·99	657·40	350	Mature	595, 587, 680, 712, 744	Werribee Butter King

* 210 days in test. † 180 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Clarke, A. B., Glenormiston South, Jersey (1).										
Denniston Princess 4th ..	52473	9.8.37	19½	6,931	5·38	375·58	250	Sr. 2	.. ..	Banyule Lord Silvair
Clarke, F. W., Toora, Jersey (10).										
Banyarra Trinket 3rd ..	42880	15.7.37	24	10,152	4·45	451·58	350	Mature	308, 364, 409	Banyule Ventilation
Hazelgrange Mistress ..	40188	28.8.37	30	11,012	5·44	598·89	350	Mature	356, 465, 490, 673	Master Clement of Glen Iris
Mer-Vue Butter Queen ..	58403	9.7.37	13	7,560	5·43	410·14	330	Sr. 4	358, 433 ..	Tooravale Silver King
Mer Vue Choice	37096	17.7.37	24½	8,280	6·10	505·31	350	Mature	400, 498, 477	Wood Searchlight
Mer Vue Choice 2nd ..	45131	19.8.37	19½	8,510	6·12	520·47	350	Mature	309, 407, 513	Tooravale Silver King
Mer Vue Choice 3rd ..	54081	29.7.37	25	8,445	6·06	511·50	310	Jr. 4	348, 447 ..	Wooravale Flashlight
Mer Vue Choice 4th ..	58404	28.7.37	21½	8,236	6·30	518·68	290	Sr. 3	404 ..	Wooravale Flashlight
Mer Vue Choice Contralto	Vol. 25	18.8.37	16	6,501	6·37	414·23	230	Jr. 2	.. ..	Barrington Largo
Mer Vue Choice Soprano ..	Vol. 25	9.8.37	16	6,428	5·83	375·00	230	Jr. 2	.. ..	Barrington Largo
Mer Vue Joy	Vol. 25	29.7.37	23½	9,101	6·54	595·07	290	Sr. 3	522 ..	Wooravale Flashlight
Clark, P. W., Whittlesea, Jersey (3).										
Coodardy Gentle Annette 3rd	Vol. 25	22.8.37	17½	6,734	4·99	336·17	230	Jr. 2	.. ..	Toorongo Belle's Bonaparte
Coodardy Gloria 8th ..	C.R.	29.8.37	16	6,192	4·96	307·31	230	Jr. 2	.. ..	Toorongo Belle's Bonaparte
Coodardy Gloria 9th ..	Vol. 25	24.8.37	13½	5,343	5·16	275·88	230	Jr. 2	.. ..	Staghorn Lord Aldan 3rd
Colenso, L. W. R., Alvie, Jersey (3).										
Normandie Hawthorn 2nd	33191	23.7.37	15½	7,260	5·36	389·04	350	Mature	387, 496, 514	Peer of Lewisham
Normandie Hawthorn 3rd ..	41296	17.9.37	N.O.C.	6,489	5·10	330·63	350	Mature	284, 327, 351	Peer of Lewisham
Normandie Hawthorn 5th ..	49869	4.9.37	10½	5,220	6·24	325·55	310	Jr. 4	232, 337 ..	Peer of Lewisham
Coughlin, C., Catani, Jersey (8).										
Gladys Park Goldmine 2nd	43936	19.7.37	7½	4,916	4·98	244·80	350	Mature	216 ..	Gladys Park Bonny Lad
Gladys Park Primule ..	C.R.	24.8.37	12	5,759	5·08	292·28	230	Jr. 2	.. ..	Staghorn Lord Segunda
Gladys Park Maureen ..	C.R.	12.9.37	10	4,829	4·87	234·94	230	Jr. 2	.. ..	Staghorn Lord Segunda
Gladys Park Starbright ..	57336	15.9.37	10	6,245	5·09	317·85	350	Mature	362, 444 ..	Werribee Bluebell's Masterpiece
Glen Valley Coral Sand 3rd	44110	6.9.37	10	7,244	4·85	350·05	330	Sr. 4	285, 348, 414	Brucevale Wyandotte King
Wonga Park Twylish Clementine	C.R.	9.8.37	11½	5,791	5·37	310·87	230	Jr. 2	.. ..	Nenagh Trinket's Twylish
*Selsey Waterlily ..	50574	22.8.37	4	3,750	6·63	248·75	310	Jr. 4	298, 189 ..	Brampton Great Boy (Imp.)
Selsey Design's Clementine	46129	19.7.37	8	6,494	6·27	407·42	330	Sr. 4	365, 406 ..	Design's Ruler (Imp.)
Coulthard, J. L., and Son, Whittlesea, Jersey (3).										
†Brookfield Rosalind 22nd	47445	18.9.37	..	6,195	5·75	356·07	350	Mature	347, 423 ..	Brookfield Ewell
Lauriston Master's Belle ..	40641	18.7.37	18	7,109	4·99	354·71	350	Mature	196, 353, 346	Rathlyn Lily's Master
Walamba Dahlia	C.R.	21.9.37	11	4,679	5·79	271·05	250	Sr. 2	233 ..	Clarendon Eyre Brigadier 3rd
Crawford, Mrs. E., Traralgon, No. 1 Farm, Jersey (5).										
Balniel Miss Fox	Vol. 25	8.8.37	5	4,740	5·08	240·62	230	Jr. 2	.. ..	Riversley Foxe's Hero
Balniel Mistletoe	Vol. 25	31.8.37	10	4,755	4·46	211·97	230	Jr. 2	.. ..	Pine Grove Larkspur's King
Balcairn Rare Rose ..	38761	24.9.37	8	5,991	4·65	278·37	350	Mature	.. ..	Balcairn Master Musician
Pine Grove Madeira ..	45720	19.8.37	7½	4,538	5·22	236·89	330	Sr. 4	.. ..	Grangelea Robin 2nd
Yuleba Larkspur ..	Vol. 25	18.8.37	9	4,421	5·61	248·10	230	Jr. 2	.. ..	War Valour (Imp.)
Crawford, Mrs. E., Traralgon, No. 2 Farm, Jersey (10).										
‡Balniel Empress ..	51631	15.8.37	4	5,075	5·59	283·89	310	Jr. 4	.. ..	Aveley Drummer
Balniel June Duchess ..	Vol. 25	20.7.37	11½	5,475	4·79	262·05	230	Jr. 2	.. ..	Werribee Royal Master
Balniel Moira	42865	13.7.37	11	5,114	5·34	273·02	330	Sr. 4	238 ..	Werribee Master Key
*Balniel Northwood Beauty	C.R.	10.9.37	4	3,915	5·67	221·85	230	Jr. 2	.. ..	Mildreth Norma's Improver
Ben Lomond Canary ..	47227	2.8.37	6	4,656	6·15	286·52	350	Mature	299 ..	Cobram Meadow Lad
Crystal Brook Leaf ..	52416	26.8.37	11½	5,180	6·01	311·19	310	Jr. 4	.. ..	Crystal Brook Noble
Crystal Brook Musk ..	47823	21.7.37	7	3,948	6·46	254·96	310	Jr. 4	.. ..	Paisley Grand Master
Crystal Brook Ruby ..	47827	13.7.37	9½	6,072	5·22	317·01	330	Sr. 4	.. ..	Crystal Brook Twylish
Turro Park Eminent's Duchess	33240	3.7.37	15½	7,817	5·05	394·70	350	Mature	.. ..	Aveley Drummer
Victoria Flare	42370	31.8.37	7	5,439	5·57	302·81	350	Mature	309 ..	Victoria Master Mariner
Daley, S. G., Terang, Jersey (1).										
Beau's Fancy Daisy (Imp.)	46864	6.9.37	25	7,790	6·05	471·10	350	Mature	.. ..	Brampton Beau
De La Rue, N. C. Weering, Jersey (3).										
§Lucerne Vale Master's Choice	49245	3.9.37	4	4,185	5·89	246·54	290	Sr. 3	227, 291 ..	Werribee Fancy Masterpiece
Lucerne Vale Master's Queen 2nd	49247	31.7.37	29	9,963	6·19	616·75	290	Sr. 3	275 ..	Werribee Fancy Masterpiece
Lucerne Vale Silver Queen 3rd	58216	1.7.37	15½	5,053	6·17	311·91	250	Sr. 2	251 ..	Lucerne Vale Noble's Master
Department of Agriculture, Burnley, Jersey (3).										
Victoria Flame	51025	30.6.37	12	5,584	6·31	349·43	270	Jr. 3	276 ..	Melrose Lord Essex
Victoria Flirt	33272	7.7.37	20½	8,174	6·32	516·91	350	Mature	359, 390, 484, 485, 513	Victoria Jack Tar
Victoria Lady Charm ..	55708	14.7.37	11	4,743	6·54	310·19	230	Jr. 2	.. ..	Melrose Lord Essex

* 240 days in test. † 240 days in test (sold). ‡ 250 days in test. § 210 days in test (sold).

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Department of Agriculture, Werribee, Friesian (4).										
Victoria Belfry	5104	18.8.37	30½	13,646	3·71	506·55	270	Jr. 3	371 ..	Victoria Joyous Mercedes
Victoria Dancing Girl ..	Vol. 14	19.7.37	21	9,413	4·63	435·38	270	Jr. 3	319 ..	Victoria Joyous Mercedes
Victoria Ilkabelle ..	Vol. 14	23.9.37	26	12,869	3·33	428·63	290	Sr. 3	384 ..	Victoria Double Top
Victoria Sonorita ..	Vol. 14	25.9.37	7½	10,433	3·28	341·69	230	Jr. 2	.. ..	Victoria Joyous Mercedes
Department of Agriculture, Werribee, Red Poll (14).										
Victoria Agrestis	3889A	11.8.37	20½	8,691	4·06	352 57	330	Sr. 4	238, 288 ..	Dominion Bright Belgian
Victoria Bright Blue ..	3011A	19.7.37	10½	7,742	4·18	323·91	350	Mature	248, 291, 280, 288	Dominion Bright Belgian
Victoria Britannia ..	6012A	28.7.37	13	5,400	4·09	220·82	250	Sr. 2	.. ..	Victoria John Bull
Victoria Bullfinch ..	6013A	12.7.37	15½	6,102	4·81	293·64	230	Jr. 2	.. ..	Victoria John Bull
Victoria Glisten	6017A	12.7.37	5	6,327	4·31	272·87	250	Sr. 2	.. ..	Victoria John Bull
Victoria Gratis	6018A	18.8.37	15	6,390	4·67	298·62	270	Jr. 3	257 ..	Victoria John Bull
Victoria Greta	3023A	26.7.37	20	9,617	3·64	350·02	350	Mature	256, 341, 377, 349, 407	Vice Regal
Victoria Heroine ..	6019A	24·9·37	20	8,136	4·65	378·66	250	Sr. 2	.. ..	Woodburn Peter Pan
Victoria Hop	6020A	6.7.37	12	8,019	4·13	331·02	230	Jr. 2	.. ..	Woodburn Peter Pan
Victoria Johanna ..	3912A	28.7.37	N.O.C.	11,222	4·58	513·86	330	Sr. 4	321, 411 ..	Dominion Bright Belgian
*Victoria Kosher ..	3914A	23.7.37	..	7,245	3·67	265·85	350	Mature	196, 286, 316	Dominion Bright Belgian
Victoria Lady Petrina ..	6022A	6.7.37	19½	8,505	4·00	340·35	230	Jr. 2	.. ..	Woodburn Peter Pan
†Victoria Marah	3915A	13.9.37	4	8,160	4·30	351·18	350	Mature	244, 332, 336	Victoria Royal Ringer
Victoria Whirl	6035A	18.8.37	16	6,876	3·89	267·38	290	Sr. 3	227 ..	Victoria Gallant
Desmond, J. J., Rochester, Jersey (6).										
Macroom Countess 2nd ..	C.R.	1.8.37	11	6,465	4·68	302·76	330	Sr. 4	221, 305, 283	Glenalvie Statesman
Macroom Ellen 4th ..	53911	9.8.37	17	8,177	5·16	421·60	310	Jr. 4	378, 483 ..	Macroom Beau Ideal
‡Macroom Ellen 5th ..	58269	12.9.37	..	6,345	5·63	357·12	310	Jr. 4	328 ..	Belgonia Battery
Macroom Fairy 2nd ..	C.R.	9.8.37	13	5,446	5·56	302·90	230	Jr. 2	.. ..	Belgonia Battery
Macroom Farm Lass 4th ..	53912	17.7.37	17	7,244	4·83	349·71	250	Sr. 2	266 ..	Macroom Mortimer
Waratta Ellen Bell ..	28660	15.7.37	25	10,614	5·17	548·50	350	Mature	392, 445, 479, 450, 464, 517, 487	Jubilee Lifelight
Dookie Agricultural College, Dookie, Ayrshire (10).										
Dookie Ada	17773	11.7.37	23½	10,001	3·80	379·99	350	Mature	336, 312, 378, 479, 427, 424, 418	Majestic of Burwood
Dookie Agnes	30379	20.7.37	21½	7,416	4·10	304·18	230	Jr. 2	.. ..	Longerenong Baron
Dookie Faith	27117	15.9.37	24	9,838	3·88	381·68	350	Mature	368, 362 ..	Dookie Patron
Dookie Flora	17776	25.7.37	18	9,306	4·38	407·42	350	Mature	317, 439, 432, 473, 409, 485, 436	Majestic of Burwood
Dookie Honour	30381	16.8.37	18	6,732	4·38	294·60	250	Sr. 2	.. ..	Tregorland Indispensible
Dookie Lila	30382	23.7.37	17	7,553	4·30	324·41	250	Sr. 2	.. ..	Tregorland Indispensible
Dookie Patsy	27120	12.9.37	25½	10,929	3·74	408·70	350	Mature	381, 457 ..	Dookie Emblem
Dookie Playful	30384	29.6.37	17½	7,772	4·52	351·39	230	Jr. 2	.. ..	Tregorland Indispensible
Dookie Sunshine ..	30385	22.7.37	16	5,208	4·37	227·58	230	Jr. 2	.. ..	Tregorland Indispensible
Dookie Susanna	28300	22.9.37	17	7,440	3·57	265·31	310	Jr. 4	294, 263 ..	Dookie Emblem
Dwyer, G., Balwyn, Jersey (5).										
Karalee Elmira	48942	9.9.37	13	6,401	5·21	333·77	350	Mature	407, 431 ..	Karalee Volunteer 6th
Karalee Linda 4th ..	48944	12.7.37	12½	4,805	6·00	288·50	290	Sr. 3	334, 326 ..	Karalee Volunteer 8th
Karalee Linda 6th ..	Vol. 25	18.7.37	10	3,907	5·91	230·87	230	Jr. 2	.. ..	Karalee Linda's Volunteer
Karalee Lola 3rd ..	53478	7.9.37	9	5,595	5·50	307·54	310	Jr. 4	355, 366 ..	Karalee Volunteer 8th
Karalee Lotus	53479	23.8.37	12½	5,621	5·01	281·85	290	Sr. 3	240, 309 ..	Jubilee Leadlight
Enders, N. H., Stanhope, Jersey (9).										
Rintoul View Petal ..	37339	25.8.37	21½	9,800	5·86	574·13	350	Mature	484, 552, 623, 624	Banyule Triplane
The Wattles Hazel 2nd ..	55512	13.9.37	16	6,824	5·16	352·36	250	Sr. 2	296 ..	Woodside Chrissy's Gamboge
The Wattles Joy 3rd ..	46418	30.8.37	16	10,642	4·92	523·68	330	Sr. 4	442, 567, 525	The Wattles Biplane
The Wattles Joy 7th ..	55514	17.9.37	21	8,229	4·55	374·29	250	Sr. 2	337 ..	Woodside Chrissy's Gamboge
The Wattles Petal ..	55522	15.8.37	23	7,682	6·25	480·16	250	Sr. 2	437 ..	Banyule Supine
The Wattles Petal 2nd ..	59706	7.8.37	15	5,115	6·58	336·50	230	Jr. 2	.. ..	Selsey Brampton Peer
The Wattles Princess 4th ..	50857	30.8.37	18	8,484	5·65	479·50	290	Sr. 3	403, 448 ..	The Wattles Biplane
The Wattles Silvermine 2nd	55525	16.8.37	18½	7,842	5·77	452·86	270	Jr. 3	373 ..	Woodside Chrissy's Gamboge
The Wattles Silvermine 4th	59709	7.8.37	15	6,305	5·15	324·57	230	Jr. 2	.. ..	Selsey Brampton Peer
Fairchild and Clutterbuck, Tinamba, Jersey (3).										
Vaucluse Clementine ..	59862	7.7.37	14	5,343	5·27	281·33	230	Jr. 2	.. ..	Finchley Lord Clement
Vaucluse Empress 2nd ..	46568	13.7.37	17½	7,278	5·36	390·01	350	Mature	277, 342 ..	Somerville Repeater
Vaucluse Marie Rose ..	Vol. 25	16.8.37	19	6,848	5.89	403·08	270	Jr. 3	.. ..	Vaucluse Concentration
Fixter, A., Boisdale, Guernsey (3).										
Avonview Dulcie 3rd ..	3964	22.8.37	21	7,847	5·33	418·51	290	Sr. 3	370 ..	Avonview Golden Lord
Fernlea Eve	2539	12.7.37	15½	7,355	4·90	360·61	350	Mature	276, 307, 275, 323, 424	Yarraview Albert
Melbourne Butterfly ..	3627	20.7.37	14½	6,269	4·63	289·96	350	Mature	230, 244, 277	Melbourne Sandboy 6th

* 210 days in test (sold). † 240 days in test. ‡ 240 days in test (herd withdrawn).

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Foster Bros., Boisdale, Jersey (6).										
Boisdale Birdie	51839	5.9.37	7½	4,149	5·18	214·90	270	Jr. 3	223 ..	Boisdale Bruin 3rd
Boisdale Goldfinch ..	51844	3.7.37	9½	4,239	5·80	245·84	270	Jr. 3	193 ..	Boisdale Dazzler
Boisdale Heatherbell ..	51846	19.9.37	4	5,153	4·89	251·81	250	Sr. 2	204 ..	Boisdale Dazzler
Boisdale Natty 2nd ..	47295	13.8.37	8	5,298	5·34	283·03	270	Jr. 3	205 ..	Boisdale Dazzler
Boisdale Twylight 2nd ..	56436	7.9.37	11	4,614	5·54	255·52	250	Sr. 2	.. ..	Wompini Master Grey
Studleigh Harebell 15th ..	46264	10.7.37	15	6,000	6·48	388·79	350	Mature	.. ..	Bellefaire Blonde's Blondex
Fraser, G. A., Addington, Ayrshire (11).										
Bonnie Doon Agnes ..	30205	12.8.37	22	7,841	3·97	311·30	230	Jr. 2	.. ..	Bonnie Doon Baronet
Bonnie Doon Beth ..	28134	22.9.37	34½	13,185	5·19	684·30	270	Jr. 3	452 ..	Glengowrie Masterpiece
Bonnie Doon Bertha ..	26968	10.9.37	11½	8,030	4·41	353·83	330	Sr. 4	257, 299 ..	Glengowrie Masterpiece
Bonnie Doon Bloom ..	30207	25.9.37	12	5,495	4·15	228·12	230	Jr. 2	.. ..	Bonnie Doon Baronet
Bonnie Doon Emma ..	29145	22.9.37	18½	7,736	3·94	304 58	230	Jr. 2	.. ..	Bonnie Doon Baronet
Bonnie Doon Flossie ..	26970	14.8.37	13½	7,908	4·27	337·58	310	Jr. 4	256 ..	Glengowrie Masterpiece
Bonnie Doon Honey ..	26972	10.9.37	30	10,926	5·46	596·72	310	Jr. 4	378 ..	Glengowrie Masterpiece
Bonnie Doon Snowdrop ..	23467	23.9.37	22½	11,111	4·96	550·78	350	Mature	381, 356, 555	Blair Athol Dream Boy
Glengowrie Beth ..	14764	8.9.37	16½	7,868	3·80	299·04	350	Mature	191, 322 ..	Liberty of Lady Bank
Glengowrie Elma ..	23872	9.9.37	9½	7,931	4·02	318·72	350	Mature	243, 248 184, 350, 360, 322	Glengowrie Baronet
Eugene of Glengowrie ..	11033	5.8.37	22	9,599	3·82	366·32	350	Mature	.. ..	Jamie's Baronet of Glengowrie
Gay, R. G., and Son, North Devon, Jersey (11).										
Elm Grove Dairymaid 2nd	43735	17.9.37	11½	7,158	5·30	379·71	350	Mature	275, 346, 362, 410	Warenda Ragtime Dominant
Elm Grove Daphne ..	39640	22.9.37	18½	7,541	5·55	418·70	350	Mature	334, 381, 420, 431	Melrose Butterman
Elm Grove Dawn ..	52626	29.8.37	10	6,876	5·47	375·92	310	Jr. 4	304, 347 ..	Gold Star of Melrose
Elm Grove Island Maid ..	Vol. 25	24.8.37	11½	4,103	6·07	248·97	230	Jr. 2	.. ..	Werribee Island King
Elm Grove Island Queen ..	Vol. 25	2.9.37	9	5,124	5·48	281·03	230	Jr. 2	.. ..	Werribee Island King
Elm Grove Jessie Fowler 2nd	37415	12.8.37	22	8,405	5·11	429·21	350	Mature	348, 342, 466, 438	Gold Star of Melrose
Elm Grove Lady Loch 2nd	52628	3.8.37	12½	6,858	4·94	338·90	290	Sr. 3	313 ..	Gold Star of Melrose
Elm Grove Laura ..	37416	21.9.37	10	6,393	6·06	387·40	350	Mature	283, 338, 380, 386	Gold Star of Melrose
Elm Grove Linda	43737	8.8.37	15½	8,277	4·87	402·94	350	Mature	285, 424, 494	Gold Star of Melrose
Elm Grove Linda 3rd ..	52630	6.8.37	13½	6,539	4·63	302·98	290	Sr. 3	250, 309 ..	Elm Grove Buttercup's Monarch
Elm Grove Milkmaid ..	34022	24.8.37	13½	6,155	6·00	369·57	350	Mature	281, 342, 375, 443, 392, 424	Elm Grove Royal Lad
Goddard, J. H., Cora Lynn, Ayrshire (5).										
Donside Lydo Lady ..	23657	15.9.37	11½	11,832	4·06	480 30	350	Mature	457, 622, 672	Olive Dale Chum
Inverurie Coin	30701	20.9.37	4½	5,009	3·78	189·18	230	Jr. 2	.. ..	Inverurie Laddie
Inverurie Lydo Lady ..	30704	1.9.37	17½	7,523	3·97	298·75	230	Jr. 2	.. ..	Inverurie Laddie
*Inverurie Maggie ..	27417	24.7.37	4	6,525	4·21	274·82	350	Mature	366, 375 ..	Oakbank Radio
*Inverurie Realm ..	27420	22.8.37	4	6,128	4·06	248·76	350	Mature	272, 286 ..	Oakbank Radio
Handbury, J. E., and Son, Toora, No. 1 Farm, Jersey (16).										
Tooravale Lassie 12th ..	50891	23.7.37	22	8,600	5·46	469·30	330	Sr. 4	360, 298, 420	King's Vale Monica 14ths Son
Tooravale Lassie 13th ..	55577	15.8.37	14½	5,475	5·97	327·05	330	Sr. 4	279 ..	King's Vale Monica 14ths Son
Tooravale Lassie 14th ..	55578	5.8.37	16	7,893	5·81	458·78	290	Sr. 3	298, 408 ..	Tooravale Gold Speck
Tooravale Lassie 16th ..	55579	12.7.37	19½	7,256	5·81	421·91	290	Sr. 3	277 ..	Tooravale Gold Speck
Tooravale Lassie 17th ..	55580	28.7.37	22	7,680	5·96	457·69	290	Sr. 3	318, 423 ..	King's Vale Monica 14ths Son
Tooravale Lassie 19th ..	59762	3.9.37	13½	7,542	5·21	392·73	250	Sr. 2	298 ..	King's Vale Monica 14ths Son
Tooravale Lassie 21st ..	Vol. 25	20.8.37	15	5,595	5·43	303·83	230	Jr. 2	.. ..	Pinewood Aristocrat
Tooravale Lassie Fowler 14th	50893	25.7.37	18½	7,965	6·24	497·39	330	Sr. 4	311, 441 ..	King's Vale Monica 14ths Son
Tooravale May 7th ..	59765	8.8.37	17½	7,970	4·80	382·28	250	Sr. 2	299 ..	Tooravale Monica's Son
Tooravale Milkmaid 24th ..	Vol. 25	9.8.37	14	6,533	5·01	327·37	230	Jr. 2	.. ..	Pinewood Aristocrat
Tooravale Princess 9th ..	46479	31.7.37	21	9,572	6·09	583·05	350	Mature	351, 627, 497, 587	Tooravale Gold Speck
Tooravale Princess 12th ..	55585	11.7.37	N.O.C.	6,258	5·96	372·78	310	Jr. 4	280, 384 ..	Tooravale Monica's Son
Tooravale Princess 14th ..	55586	2.7.37	20½	7,740	5·84	452·34	290	Sr. 3	392 ..	Tooravale Gold Speck
Tooravale Princess 15th ..	55587	16.8.37	17	5,961	5·86	349·19	290	Sr. 3	228, 294 ..	King's Vale Monica 14ths Son
Tooravale Princes 19th ..	59770	3.8.37	18	7,248	5·97	432·69	250	Sr. 2	298 ..	King's Vale Monica 14ths Son
Tooravale Starleigh 7th ..	50898	15.8.37	26½	9,710	6·01	583·33	350	Mature	233, 324, 461, 398, 480	Tooravale Gold Speck

* 240 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Handbury, J. E., and Son, Toora, No. 2 Farm, Jersey (7).										
Tooravale Clover 4th ..	55576	11.9.37	8	4,761	6·43	306·42	310	Jr. 4	205, 273 ..	Tooravale Monica's Son
Tooravale Lassie Fowler 8th	42254	12.7.37	14	5,338	5·28	281·76	350	Mature	286, 377, 435, 326, 326	Tooravale Golden Mac
Tooravale Lassie Fowler 10th	42255	14.8.37	12½	6,206	5·41	335·52	350	Mature	225, 298, 315, 280, 326	King's Vale Monica 14ths Son
Tooravale Maid's Princess 4th	59764	24.8.37	6½	4,404	5·18	228·31	250	Sr. 2	211 ..	Tooravale Gold Speck
Tooravale Milkmaid 18th ..	55584	14.9.37	7½	3,758	6·77	254·34	270	Jr. 3	215 ..	Tooravale Gold Speck
Tooravale Milkmaid 19th ..	59766	14.7.37	14	3,947	5·88	231·94	270	Jr. 3	175 ..	Tooravale Gold Speck
Tooravale Starleigh 12th ..	Vol. 25	23·7·37	10	3,908	5·45	212·80	250	Sr. 2	.. ..	Tooravale Gold Speck
Handley, S. C., Dandenong, Jersey (3).										
Barrowby Queen's Betty ..	47134	24.8.37	8	9,107	4·42	402·81	310	Jr. 4	328, 395 ..	Grangelea Progress
Barrowby Rose Fancy ..	56280	20.7.37	28	9,333	5·47	510·90	270	Jr. 3	316, 383 ..	Wompini Twilight
Barrowby Queen 2nd ..	38809	12.8.37	22	8,964	4·78	428·59	350	Mature	286, 383, 387, 441	Grangelea Progress
Harvey, T., Boisdale, Jersey (5).										
Jerseyholm Blue Bell 13th	40371	23.7.37	25½	6,867	5·26	361·10	350	Mature	281, 381, 371	Werribee Master Fox
Jerseyholm Blue Bell 17th	44478	20.8.37	11	6,420	5·69	365·44	330	Sr. 4	310, 346 ..	Werribee Master Fox
Jerseyholm Empress 32nd	40379	24.7.37	22	8,895	5·04	448·08	350	Mature	345, 367, 343	Werribee Master Fox
Jerseyholm Empress 42nd	53359	13.9.37	15½	6,437	6·18	397·77	290	Sr. 3	331 ..	Jerseyholm Master's Expert
Jerseyholm Empress 45th	53362	10.8.37	19½	7,467	4·84	361·18	250	Sr. 2	343 ..	Jerseyholm Master's Fox 6th
Hayward, Dr. A. R., Hastings, Jersey (5).										
Windrest Chevy	42529	7.7.37	13½	6,671	6·18	412·50	350	Mature	251. 359, 289, 337	Edmonton Rarius
Windrest Chevy's Charm ..	60057	9.8.37	10	5,895	6·72	396·40	250	Sr. 2	254 ..	Glen Iris Montrose Duke
Windrest Chevy's Cherub ..	Vol. 25	9.9.37	16	6,768	5·70	385·58	230	Jr 2	.. ..	Glen Iris Matador
Windrest Island Gold ..	60058	31.7.37	6	6,804	5·11	347·50	250	Sr. 2	209 ..	Glen Iris Montrose Duke
Windrest Rose Marie ..	55878	25.9.37	18	8,343	5·56	464·12	290	Sr. 3	231, 306 ..	Clarendon Eyre Eminent's Achievement
Henderson, W., Grasmere, Ayrshire (9).										
Carracoorte Belle 2nd ..	29201	4.9.37	6½	4,418	4·73	209·01	250	Sr. 2	199 ..	Grand View Bernie
Carracoorte Bunty 28th ..	30259	20.8.37	9½	4,152	4·88	202·72	230	Jr. 2	.. ..	Grand View Bernie
Carracoorte Coral 14th ..	30260	5.9.37	5½	4,343	4·25	184·42	230	Jr. 2	.. ..	Carracoorte Gay Lad 2nd
Carracoorte Filpail 22nd ..	29207	11.9.37	8½	4,469	4·48	200·15	250	Sr. 2	210 ..	Grand View Bernie
Carracoorte Gerty 12th ..	29208	22.7.37	7½	5,403	4·03	217·80	350	Mature	291, 211 ..	Carracoorte Gerty's Producer
Carracoorte Lucy 14th ..	24703	6.8.37	15½	6,804	4·05	275·36	350	Mature	304, 340 ..	Blue Bell's Pride of Glencourt
Carracoorte Rose Petal 2nd	30264	17.8.37	7	4,736	4·13	195 68	290	Sr. 3	.. ..	Grand View Bernie
*Carracoorte Viola 22nd ..	24712	20.8.37	4	6,255	4·34	271·41	350	Mature	251, 304, 224, 297	Carracoorte Pilot
*Carracoorte Viola 26th ..	30266	4.9.37	4	4,875	5·21	253·97	350	Mature	101, 251, 239	Carracoorte Pilot
Hercus, T. B., Hayanmi, Jersey (9).										
†Mologa Belle 2nd ..	58513	12.9.37	4	3,930	4·27	167·70	290	Sr. 3	242 ..	Belgonia Hinkler
Mologa Blossom	58514	1.7.37	11½	5,243	5 35	280·59	250	Sr. 2	288 ..	Belgonia Hinkler
*Mologa Bonnie	54179	21.9.37	4	6,330	5·37	339·66	330	Sr. 4	355, 412 ..	Belgonia Hinkler
Mologa Cherry Plum ..	58515	28.6.37	10	5,350	5·66	302·76	250	Sr. 2	257 ..	Belgonia Hinkler
Mologa Pansy	49589	4.7.37	19	9,018	5·27	475·40	350	Mature	344, 401, 451	Belgonia Hinkler
Mologa Poppy	54182	14.7.37	10	5,443	5·76	313·54	270	Jr. 3	340 ..	Belgonia Hinkler
Mologa Tulip	49590	14.8.37	12½	7,797	5·26	410·25	350	Mature	336, 379, 360	Belgonia Hinkler
Mologa Viola	58518	8.7.37	16	6,138	5·27	323·56	250	Sr. 2	306 ..	Belgonia Hinkler
Mologa Violet	49591	10.7.37	20	9,468	4 82	456·56	350	Mature	349, 387, 427, 436	Eurobin Biplane
Herzog, R. F., Nilma, Illawarra Shorthorn (1).										
Rockleigh May	17883	24.8.37	7	7,401	3·79	280·45	330	Sr. 4	.. ..	Swanlea Glenroy
Hore, E., Leitchville, Jersey (15).										
Milvue Christmas Lily ..	58459	21.9.37	15½	5,312	5·88	312·56	230	Jr. 2	.. ..	Milvue Bettwy's Master
Milvue Golden Duchess ..	58461	17.9.37	20	7,680	4·70	361·30	250	Sr. 2	328 ..	Glen Iris Lord Viola 2nd
Milvue Honesty	58462	15.9.37	20½	6,257	5·00	312·67	230	Jr. 2	.. ..	Clarendon Eyre Eminent's Lion 5th
Milvue Larkspur's Attraction	58464	13.7.37	21	7,355	5·80	426·65	230	Jr. 2	.. ..	Clarendon Eyre Eminent's Lion 5th
Milvue Mistress	58465	9.9.37	17	5,207	5·13	267·25	230	Jr. 2	.. ..	Milvue Bettwy's Master
Milvue Petal	58466	11.9.37	17	6,081	5·31	322·66	230	Jr. 2	.. ..	Balcairn Mabel's Master
Milvue Rosebud	58467	15.9.37	20	6,834	4·81	328·88	250	Sr. 2	270 ..	Milvue Christmas Melody
Milvue Roseleaf	45181	9.9.37	21	8,207	5·01	411·06	350	Mature	388, 426 ..	Taranah Commander
Milvue Roseleaf 2nd ..	58468	14.8.37	21	6,399	5·57	356·23	230	Jr. 2	.. ..	Milvue Christmas Melody
Milvue Tiny Rosebud ..	58469	11.9.37	19	6,807	5·23	355·87	230	Jr. 2	.. ..	Milvue Bettwy's Master
Tavistock Larkspur ..	55437	10.8.37	18	8,382	5·86	491·57	290	Sr. 3	433, 501 ..	Werribee Ranger
Tavistock Valerie ..	55444	16.8.37	21	8,687	5·78	502·08	290	Sr. 3	324, 441 ..	Werribee Ranger
Troed-Yr-Rhiw Dily's 2nd	50928	11.7.37	14	8,576	5·29	453·41	330	Sr. 4	373, 419 ..	Glen Iris Montrose Duke
Troed-Yr-Rhiw Eastern Queen	59794	12.8.37	18	7,224	5·58	403·22	270	Jr. 3	355 ..	Clarendon Eyre Oxford Dreamer
Troed-Yr-Rhiw Mely's 2nd	Vol. 25	19.8.37	24	8,426	4·97	418·51	310	Jr. 4	296 ..	Troed-Yr-Rhiw Masterman

* 240 days in test. † 210 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Huffer, J. A., Gormandale, Jersey (5).										
Glen Valley Handsome Girl 5th	Vol. 25	23.8.37	12	5,684	5·84	331·75	270	Jr. 3	299 ..	Glen Valley Mercedes Masterpiece
*Glen Valley Joyce ..	48439	17.9.37	..	5,280	6·15	324·88	310	Jr. 4	305, 393 ..	Brucevale Wyandotte King
†Glen Valley Periwinkle ..	Vol. 25	30.8.37	4	2,933	5·66	165·87	230	Jr. 2	.. ..	Glen Valley Handsome Boy 2nd
Glen Valley Royal Rose 2nd	37612	12.8.37	15	6,686	5·27	352·66	350	Mature	279, 273, 252, 407	Glen Valley Waverley Count
Glen Valley Silvershine ..	52946	14.8.37	16	7,315	5·45	398·43	350	Mature	282, 386, 397, 420	Melrose Ensign
Hurrey, W. H., Koonwarra, Jersey (11).										
Burwood Cream Belle 4th ..	Vol. 25	5.9.37	8½	4,245	6·43	272·94	230	Jr. 2	.. ..	Kooreena Handsome Lad
Burwood Cream Belle 5th ..	Vol. 25	23.8.37	13	5,709	5·23	298·86	230	Jr. 2	.. ..	Kooreena Handsome Lad
Burwood Mourier Belle ..	56652	22.9.37	11½	6,581	5·85	384·67	310	Jr. 4	362 ..	Columbines Defiance of Linga Longa
Burwood Mourier Belle 2nd	Vol. 25	29.8.37	9½	4,217	6·52	275·00	230	Jr. 2	.. ..	Kooreena Handsome Lad
Kooreena Carrie 4th ..	49033	10.9.37	16	8,444	6·50	549·27	330	Sr. 4	430, 546 ..	Kooreena Carrie 3rds Halo
Kooreena Lady 7th ..	Vol. 25	16.7.37	18	6,777	5·77	390·73	250	Sr. 2	.. ..	Kooreena Carrie 3rds Halo
Kooreena Maranta 7th ..	40585	13.8.37	17½	7,976	5·74	458·21	350	Mature	313, 402, 471	Columbine's Defiance of Linga Longa
Kooreena Maranta 16th ..	Vol. 25	10.9.37	13	5,952	6·17	367·48	230	Jr. 2	.. ..	Kooreena Carrie 3rds Halo
Kooreena Mourier Queen 11th	58058	6.8.37	N.O.C.	5,847	6·61	386·73	250	Sr. 2	349 ..	Kooreena Carrie 3rds Halo
Kooreena Yo Yo ..	44759	12.9.37	12½	7,893	5·18	409·20	330	Sr. 4	360, 390, 438	Columbine's Defiance of Linga Longa
Kooreena Yo Yo 3rd ..	Vol. 25	6.9.37	12½	5,339	5·88	314·03	230	Jr. 2	.. ..	Kooreena Mourier King 2nd
King, H. W., Warragul, Jersey (6).										
Karoola Beauty	28996	13.8.37	11	6,318	5·02	317·17	350	Mature	323, 379, 400, 387, 434, 389, 418	Glen Valley Fancy Roses Lad
Karoola Dianthus ..	37697	21.7.37	11	7,364	4·92	362·02	350	Mature	266, 368, 359, 402	Glenallan Mariposa
Karoola Doris	37698	10.7.37	11	5,339	5·50	293·44	350	Mature	249, 316, 271, 310	Glenallan Mariposa
Karoola Dulcie	C.R.	9.7.37	9½	4,212	5·44	229·25	230	Jr. 2	.. ..	Glen Valley Royal Master
†Karoola Honey Bee 3rd ..	23242	16.7.37	4	5,145	4·49	230·94	350	Mature	358, 464, 470, 481, 453, 440, 385	Pretty King of Koorawatha
Karoola Sweet Nell ..	33441	21.7.37	11	6,977	5·06	353·01	350	Mature	289, 378, 307, 446, 342, 423	Cream Lad of Mayland
Lane, K. D., Merino, Jersey (3).										
Dalray Fairy Queen ..	26007	5.7.37	9	7,165	4·83	346·31	350	Mature	365, 409, 346	Glenloch Sultan
Dalray Gold Speck ..	52450	24.7.37	8½	3,716	6·14	228·01	250	Sr. 2	179 ..	Dalray Masterman
Dalray Larkspur	29000	22.7.37	11½	7,685	5·13	394·51	350	Mature	278, 403 ..	Sutton Lea Director
Leask, G. C., Garfield, Ayrshire (4).										
Burghclere Iris	30222	7.9.37	14	6,889	4·17	287·01	230	Jr. 2	.. ..	Wayside Wilfred
‡Glen Afton Margot ..	26142	9.8.37	4	8,190	3·81	312·18	350	Mature	.. ..	Glen Afton Gay Lad
Wayside Constance ..	28945	5.9.37	15	8,742	4·04	353·51	330	Sr. 4	345 ..	Wayside Winsome Scott
Wayside Dahlia	30992	1.8.37	17½	7,679	4·12	316·62	250	Sr. 2	.. ..	Great Scot of Gowrie Park
Le Noury, E., Werribee South, Guernsey (4).										
Melbourne Golden Pamela	5860	28.7.37	8½	5,331	4·74	252·60	250	Sr. 2	.. ..	Melbourne Peter Pan
§Melboune Sunflower ..	2714	8.8.37	..	4,575	4·26	195·12	350	Mature	.. ..	Yarraview Diamond 2nd
Werribeer Loulou's Nalda ..	6481	27.8.37	6½	4,761	5·56	264·75	230	Jr. 2	.. ..	Werribee Prince Don
Werribee Merry Maid ..	2638	28.7.37	13	5,894	5·51	325·05	350	Mature	214, 310, 300, 337	Yarraview Saxon
Longerenong Agricultural College, Dooen, Ayrshire (2).										
Longerenong Cootamundra Wattle 2nd	29740	7.8.37	11	6,147	3·76	230·99	230	Jr. 2	.. ..	Dookie Punch
Longerenong Laurustine 2nd	26560	30.8.37	10½	7,622	4·24	323·20	350	Mature	221, 306 ..	Longerenong Noble
Lyon, C. G., Heidelberg, Jersey (7).										
Banyarra Silvermine 4th ..	56250	21.9.37	13	5,076	5·87	298·01	230	Jr. 2	.. ..	Banyarra Manager
Banyule Frill	42882	31.7.37	16	6,816	5·16	351·42	310	Jr. 4	289, 327 ..	Banyule Amplifier
Banyule Silvermine 63rd ..	28844	29.8.37	17½	7,917	5·26	416·60	350	Mature	343, 329, 469, 429, 472	Air Lord of Banyule
Banyule Silvermine 94th ..	47128	22.9.37	15	6,417	6·13	393·34	250	Sr. 2	312 ..	Banyule Supreme
Banyule Silvermine 96th ..	51655	22.9.37	21	7,350	4·47	350·56	250	Sr. 2	.. ..	Oxford Beau's Pretty Oxford (Imp.)
Banyul Silvermine 98th ..	51657	19.9.37	14½	5,156	5·11	263·45	230	Jr. 2	.. ..	Oxford Beau's Pretty Oxford (Imp.)
Banyule Silvermine 100th ..	51659	30.8.37	13½	4,785	5·09	243·62	230	Jr. 2	.. ..	Oxford Beau's Pretty Oxford (Imp.)
Macauley, C. W. W., Rochester, Jersey (3).										
Taranah Dahlia 3rd ..	C.R.	10.8.37	11	5,666	5·62	318·69	230	Jr. 2	.. ..	Taranah Reliance
Taranah Floss 3rd ..	Vol. 25	24.7.37	17	5,679	5·26	298·47	230	Jr. 2	.. ..	Taranah Reliance
Taranah Rainbow 2nd ..	Vol. 25	5.8.37	12	5,427	5·28	286·44	230	Jr. 2	.. ..	Werribee Bluebell's Masterpiece

* 240 days in test (withdrawn, sick). † 210 days in test. ‡ 240 days in test. § 210 days in test (sold).

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
McCosh, S. J., Wandin North, Jersey (1).										
Carney Dell Brilliant 2nd ..	39187	12.8.37	18½	8,171	5·47	446·80	350	Mature	309, 421, 442, 547	Carney Dell Masterpiece
McDougall, J., Byaduk, Jersey (7).										
Park View Charm 3rd ..	41512	22.7.37	13	6,789	4·78	324·56	350	Mature	234, 323, 322	Grangelea Royal
Park View Daphne 3rd ..	Vol. 25	7.9.37	10½	5,082	5·75	292·36	230	Jr. 2	.. ..	Staghorn Fancy Observer 2nd
Park View Lona 2nd ..	45649	9.7.37	9	5,916	6·08	359·61	330	Sr. 4	347, 352 ..	Grangelea Royal
Park View Mayflower 4th ..	54678	24.9.37	..	5,274	5·42	285·89	290	Sr. 3	310 ..	Staghorn Fancy Observer 2nd
Park View Myrtle 3rd ..	Vol. 25	6.9.37	10½	4,863	5·46	265·35	230	Jr. 2	.. ..	Staghorn Fancy Observer 2nd
Park View Shirley 2nd ..	41520	10.9.37	13½	6,011	5·06	303·93	350	Mature	230, 349, 329	Grangelea Royal
Park View Valerie ..	Vol. 25	17.9.37	..	4,573	5·22	238·62	230	Jr. 2	.. ..	Staghorn Fancy Observer 2nd
McErvale, I., and Sons, Camperdown, Jersey (8).										
Airlie Buttercup 7th ..	37292	25.8.37	8	5,876	4·79	281·59	350	Mature	296, 306 ..	Hedge of Banyule
*Airlie Isla 3rd	38652	29.7.37	4	5,915	4·37	258·22	350	Mature	359, 353 ..	Hedge of Banyule
Cumnock Amelia's Lady ..	47849	28.7.37	13	7,287	4·11	299·23	350	Mature	345, 256 ..	Cumnock Fancy Masterpiece
Cumnock Cynthia ..	C.R.	20.7.37	7½	5,082	5·30	269·47	250	Sr. 2	.. ..	Cumnock Fancy Masterpiece
Cumnock Cyrilla ..	Vol. 25	5.9.37	8½	5,634	5·04	283·91	350	Mature	.. ..	Cumnock Fancy Masterpiece
Cumnock Fuchsia ..	C.R.	29.6.37	11½	5,463	4·63	252·94	230	Jr. 2	.. ..	Cumnock Fancy Masterpiece
Gnarbrook Dainty 3rd ..	44149	22.7.37	10½	5,125	5·29	271·19	350	Mature	.. ..	Werribee Masterful
Lauriston Bluebell 3rd ..	40636	25.7.37	7½	5,573	5·21	290·15	350	Mature	.. ..	Lauriston Twylish Nobility
McMinn, R., Alexandra, Jersey (5).										
†Ear Park Cream Girl ..	39562	19.8.37	4	5,670	5·13	290·79	350	Mature	.. ..	Ear Park Audrey's Bruce
‡Rainga Royal Duchess ..	24444	20.8.37	4	2,160	5·35	115·95	350	Mature	206, 194, 321, 274	Dunalister Mannikin Progressive Boy
†Two Hills Clover ..	46536	9.8.37	4	4,313	5·66	244·13	350	Mature	.. ..	Zintara Princeps
§Wompini Bonnie Bell ..	55904	27.8.37	4	4,155	5·06	210·18	290	Sr. 3	.. ..	Werribee Butter King
†Zintara Sparkler 3rd ..	46859	18.8.37	4	4,290	5·17	222·00	330	Sr. 4	.. ..	Zintara Princeps
McNabb, G. A. and Son, Irrewillipe East, Jersey (26).										
Avalon Noble Pansy 3rd ..	36833	14.8.37	16½	5,432	6·20	337·03	350	Mature	398, 294, 421, 333, 432	Noble of Avalon
Boorene Silver Light ..	25542	31.8.37	20	7,982	5·83	465·46	350	Mature	377, 478, 493, 470, 519, 368, 480	Lady Grey's Silvermine 2nd of Somerset
Maxon Bright Clara ..	54013	20.9.37	15½	6,341	5·65	357·96	270	Jr. 3	315 ..	Maxon Starbright Prince 5th
Maxon Bright Favourite ..	45055	12.9.37	17½	7,745	5·39	417·68	350	Mature	337, 342, 428	Maxon Starbright Prince 4th
Maxon Bright Primrose 2nd	58344	28.8.37	17½	6,276	4·71	295·84	230	Jr. 2	.. ..	Maxon Starbright Prince 5th
Maxon Chieftain's Alsyke ..	49422	7.9.37	17	4,775	6·37	304·04	290	Sr. 3	188, 282 ..	Maxon Chieftain
Maxon Cornice	40931	18.8.37	14½	6,336	6·43	407·09	350	Mature	387, 387 ..	Maxon Mercede's Chief 4th
Maxon Count's Alsyke 4th	58348	29.8.37	17	5,498	6·02	331·16	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Count's Daisy 3rd ..	58349	1.9.37	10½	4,098	6·92	283·66	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Count's Daisy 4th ..	58350	5.9.37	10	4,373	6·27	274·07	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Count's Favourite 2nd	49423	19.9.37	15	5,312	6·36	337·82	290	Sr. 3	227, 280 ..	Maxon Count Graceful
Maxon Count's Favourite 3rd	58351	8.9.37	17	5,028	5·50	276·72	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Count's Lady 4th ..	54019	14.9.37	17½	6,738	5·56	374·85	270	Jr. 3	346 ..	Maxon Count Graceful
Maxon Count's Lodestone 2nd	54020	1.9.37	12½	5,627	6·03	339·09	270	Jr. 3	339 ..	Maxon Count Graceful
Maxon Count's Ranunculus 2nd	58353	6.9.37	15½	4,738	6·72	318·59	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Graceful Bouvardia .	49426	17.9.37	15½	6,372	6·89	439·21	290	Sr. 3	252, 328 ..	Maxon Count Graceful
Maxon Graceful Duchess 2nd	49427	31.8.37	12	6,566	5·70	374·33	310	Jr. 4	282, 392 ..	Maxon Count Graceful
Maxon Graceful Marie ..	49428	11.9.37	13½	4,745	5·70	270·68	290	Sr. 3	200, 292 ..	Maxon Count Graceful
Maxon Mercedes Ranunculus	45067	18.9.37	16	6,573	5·84	383·89	330	Sr. 4	332, 283, 356	Maxon Mercedes Chief 4th
Maxon Noble's Alsyke ..	34221	18.9.37	16½	8,399	5·38	452·11	350	Mature	268, 421, 412, 459, 401, 508	Avalon Noble 8th
Maxon Noble's Daisy 2nd ..	54025	19.9.37	19	7,674	4·81	368·92	270	Jr. 3	284 ..	Avalon Noble 8th
Maxon Noble's Goldfinch 2nd	54026	13.9.37	15½	5,724	6·87	393·46	250	Sr. 2	275 ..	Avalon Noble 8th
Maxon Noble's Lodie 2nd ..	58357	13.7.37	19	5,696	5·45	310·45	230	Jr. 2	.. ..	Avalon Noble 8th
Maxon Silver Light ..	58358	5.9.37	10½	4,499	6·76	303·93	230	Jr. 2	.. ..	Maxon Count Graceful
Maxon Sweet Estelle ..	54029	7.9.37	17	6,186	6·41	396·74	250	Sr. 2	285 ..	Maxon Count Graceful
Maxon Tiare	40939	14.9.37	16½	7,251	5·37	389·47	350	Mature	240, 267, 337, 416	Maxon Mercedes Chief 4th
Maher, R. H., Tongala, Jersey (8).										
Rosemont Lady Fowler 7th	50457	9.9.37	16½	7,175	5·42	388·97	350	Mature	314, 303, 331	Troed-Yr-Rhiw Masterpiece
Rosemont Lady Fowler 16th	Vol. 25	4.9.37	8½	3,905	5·01	195·71	230	Jr. 2	.. ..	Rosemont Golden Emblem
Rosemont Lassie Fowler 10th	50460	1.9.37	12½	6,329	5·25	332·41	350	Mature	270, 329, 299	Rosemont Laddie Fowler 3rd
Rosemont Lassie Fowler 12th	Vol. 25	5.9.37	10	5,231	5·56	291·01	250	Sr. 2	.. ..	Rosemont Laddie Fowler 3rd
Rosemont Laura 7th ..	50461	18.7.37	13½	5,304	5·86	310·58	310	Jr. 4	247 ..	Rosemont Laddie Fowler 3rd
Rosemont Primrose 4th ..	41866	9.9.37	13	6,773	5·21	352·62	350	Mature	365, 333, 360	Rosemont Laddie Fowler 3rd
Rosemont Primrose 6th ..	Vol. 25	7.8.37	16	6,693	5·06	339·00	250	Sr. 2	.. ..	Rosemont Laddie Fowler 3rd
Rosemont Silvermine 6th ..	Vol. 25	11.9.37	12	6,791	5·13	348·70	250	Sr. 2	.. ..	Rosemont Golden Emblem

* 245 days in test. † 240 days in test. ‡ 180 days in test. § 210 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Maloney, P. J., Tongala, Jersey (21).										
Belgonia Design's Eileen ..	51698	17.8.37	21½	7,566	6·31	477·21	250	Sr. 2	397 ..	Design's Ruler (Imp.)
Belgonia Design's Lady ..	42918	9.9.37	4	7,184	4·76	342·24	350	Mature	427, 445, 417	Design's Ruler (Imp.)
Belgonia Design's Lady 2nd	56315	3.9.37	14	6,162	5·06	311·99	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Design's Marie 2nd	51700	13.8.37	16½	8,135	4·82	391·89	270	Jr. 3	392 ..	Design's Ruler (Imp.)
Belgonia Design's Marie 3rd	56316	7.9.37	10½	5,057	5·00	252·96	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Design's Noella ..	42697	7.9.37	15	8,430	5·20	437·96	350	Mature	370, 462, 470, 479	Design's Ruler (Imp.)
*Belgonia Design's Peggy 13th	51702	6.9.37	4	5,115	4·95	252·98	250	Sr. 2	224 ..	Design's Ruler (Imp.)
Belgonia Design's Perree ..	42920	5.9.37	18½	8,910	4·97	442·94	350	Mature	387, 438, 469	Design's Ruler (Imp.)
Belgonia Duke's Buttercup 2nd	56318	23.8.37	21½	6,909	5·06	349·47	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Duke's Lady 2nd	56319	12.7.37	20	6,930	4·90	339·28	250	Sr. 2	.. ..	Duke of the Lake (Imp.)
Belgonia Eileen	38827	18.8.37	20	8,066	6·02	485·38	350	Mature	390, 433, 472, 518	Werribee Planet
Belgonia Eileen 2nd ..	42921	17.8.37	34	11,295	5·50	621·03	350	Mature	427, 561, 620	Duke of the Lake (Imp.)
Belgonia Eileen 4th ..	51703	7.8.37	20	6,807	5·82	395·92	270	Jr. 3	326 ..	Design's Ruler (Imp.)
Belgonia Eileen 6th ..	51704	16.9.37	15	6,555	5·75	376·79	250	Sr. 2	379 ..	Design's Ruler (Imp.)
Belgonia Gem's Noella ..	42922	12.7.37	35	11,357	4·86	552·36	330	Sr. 4	367, 495 ..	Duke of the Lake (Imp.)
Belgonia Junette 3rd ..	56321	2.9.37	18	8,180	5·21	425·92	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Peggy 9th ..	37898	8.9.37	16½	8,960	4·74	424·74	350	Mature	353, 417, 450, 482, 540	Aveley Rex
Belgonia Peggy 11th ..	42923	8.8.37	26	9,560	5·06	483·89	330	Sr. 4	372, 436, 497	Duke of the Lake (Imp.)
Belgonia Suspense 5th ..	51705	23.8.37	20½	6,978	5·43	378·75	270	Jr. 3	.. ..	Design's Ruler (Imp.)
Belgonia Suspense 6th ..	56325	17.9.37	15	7,100	5·82	413·33	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Suspense 7th ..	Vol. 25	11.9.37	10	4,480	6·11	273·86	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Masters, S. H., Murraydale, Jersey (6).										
Rutland Bright Stockings	41918	8.7.37	19	8,250	4·98	410·53	350	Mature	275, 356, 437, 433, 472	St. Alban's Fuchsia's Choice
Rutland Brunette 6th ..	50524	19.7.37	24	7,610	5·35	407·42	330	Sr. 4	292, 405, 382	Rutland Rover
Rutland Brunette 10th ..	59354	25.8.37	23	7,149	5·38	384·44	270	Jr. 3	335 ..	King's Vale Lauder
Rutland Brunette 11th ..	59355	4.7.37	20	6,963	4·76	331·19	250	Sr. 2	265 ..	King's Vale Lauder
Rutland Brunette 12th ..	59356	23.8.37	23	7,392	5·05	373·27	270	Jr. 3	316 ..	King's Vale Lauder
Rutland Brunette 15th ..	Vol. 25	17.8.37	19	5,591	5·33	298·01	230	Jr. 2	.. ..	King's Vale Lauder
Mesley, W. T., Dalyston, Jersey (8).										
Warenda Dal Monte 7th ..	59926	5.9.37	15½	5,960	4·58	272·82	250	Sr. 2	.. ..	Warenda Perpetuate
Warenda Gazelle 8th ..	33519	5.7.37	N.O.C.	8,401	4·37	367·33	350	Mature	416, 452, 484	Warenda Snap
Warenda Gazelle 12th ..	59927	26.7.37	9	6,386	5·45	348·10	250	Sr. 2	.. ..	Riverbank Royal Exchange
Warenda Mandoline 10th ..	51105	22.7.37	11½	6,972	5·55	386·68	290	Sr. 3	.. ..	Warenda Perpetuate
†Warenda Mandoline 11th	51106	26.7.37	4	5,450	5·62	306·47	290	Sr. 3	.. ..	Warenda Perpetuate
‡Warenda Meadow Queen 5th	51108	27.7.37	4	5,718	4·99	285·51	310	Jr. 4	.. ..	Warenda Snap
Warenda Philomel 6th ..	Vol. 25	8.8.37	10	4,197	5·32	223·23	230	Jr. 2	.. ..	Warenda Perpetuate
Warenda Mandoline 13th ..	Vol. 25	10.8.37	14½	6,452	5·58	359·74	250	Sr. 2	.. ..	Warenda Perpetuate
Mitchell, R. H., Linton, Jersey (2).										
Clifford Farm Gladsome ..	32965	11.7.37	14½	5,652	6·49	366·73	350	Mature	411, 465, 472	Clifford Farm Eliminator
Clifford Farm Jessie ..	43410	11.9.37	20½	9,638	4·20	405·10	350	Mature	398, 417 ..	Clifford Farm Don
Moore, J., and Co., Yarram, Jersey (12).										
Clarendon Eyre Camille 12th	C.R.	11.7.37	15½	4,289	4·77	204·48	230	Jr. 2	.. ..	Clarendon Eyre Oxford Gamboge 2nd
Rydon Belle	41920	16.7.37	15	6,080	4·96	344·80	350	Mature	347, 400, 355	Melrose Migrant
Tooloonook Heather 2nd ..	50883	28.6.37	12	7,979	4·16	331·91	350	Mature	228, 291, 334, 396	Heroic of Somerville
Tooloonook Heather 5th ..	Vol. 25	28.7.37	7	4,092	5·06	207·21	230	Jr. 2	.. ..	Anfield Diadem's Masterpiece
Tooloonook Lotus 3rd ..	46467	19.7.37	14	6,512	4·08	265·77	350	Mature	207, 270, 263	Heroic of Somerville
Tooloonook Molly 5th ..	59756	2.9.37	10	7,563	4·83	364·99	330	Sr. 4	173, 308 ..	Tooloonook Belle's Hero
Tooloonook Polygold ..	C.R.	28.6.37	21	7,862	4·83	379·54	330	Sr. 4	305, 277 ..	Tooloonook Cianthus Hero
Tooloonook Trixie 13th ..	46473	15.9.37	N.O.C.	8,078	4·64	375·07	350	Mature	260, 310, 243, 364	Tooloonook Plumbago's Hero
Tooloonook Trixie 15th ..	59759	15.9.37	10	6,660	4·62	307·75	330	Sr. 4	262, 294, 281	Tooloonook Carob's Hero
Tooloonook Trixie 18th ..	55574	18.9.37	9	6,803	4·66	317·34	310	Jr. 4	236, 304 ..	Tooloonook Peach's Noble
Tooloonook Trixie 21st ..	Vol. 25	22.8.37	11½	4,769	5·19	247·64	230	Jr. 2	.. ..	Anfield Diadem's Masterpiece
Tooloonook Verbena 9th ..	Vol. 25	17.9.37	6½	5,126	5·77	295·97	230	Jr. 2	.. ..	Anfield Diadem's Masterpiece
Murdoch, J. T., and Son, Lismore, Jersey (5).										
Ismalia Garenne	57781	28.8.37	13	4,959	5·69	282·00	230	Jr. 2	.. ..	Orphanage Molly's Thorn
Murona Countess ..	45324	5.9.37	13	6,680	5·19	346·36	350	Mature	.. ..	Banyule Airpoise
Murona Countess 3rd ..	49735	22.9.37	12	6,523	5·31	346·21	290	Sr. 3	310 ..	Banyule Airpoise
Murona Petal	37615	17.8.37	13	6,237	5·32	331·70	350	Mature	298 ..	Banyule Airpoise
Murona Petal 4th ..	49736	20.8.37	8½	4,781	5·30	253·33	310	Jr. 4	244 ..	Orphanage Lady's Nobleman

* 240 days in test. † 248 days in test. ‡ 247 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Nancarrow Bros., Kerang, Jersey (5).										
Bellaire Molly 8th ..	37975	7.8.37	23	8,352	5·51	459·80	350	Mature	422, 430, 479, 538, 552	Werribee Fancy Clementine's King
Pine Ridge Hawthorn ..	58997	13.7.37	13½	6,824	4·66	317·91	270	Jr. 3	307 ..	Woodside Reprieve's Volunteer
Pine Ridge Hawthorn 2nd	Vol. 25	17.8.37	17	6,303	4·70	296·40	230	Jr. 2	.. ..	Duke of the Lake (Imp.)
Pine Ridge Rose Dream ..	Vol. 25	26.8.37	13	5,048	4·78	241·31	230	Jr. 2	.. ..	Duke of the Lake (Imp.)
Pine Ridge Silvermine 2nd	58999	30.8.37	16	6,701	4·98	334·23	250	Sr. 2	315 ..	Duke of the Lake (Imp.)
Nicholas, M. A., Sherbrooke, Jersey (15).										
BramptonChampion's Blonde (Imp.)	56038	28.8.37	13½	6,203	5·74	355·89	230	Jr. 2	.. ..	Brampton Son of Champion's
Brampton Champion's Lady (Imp.)	56040	23.9.37	18	5,940	5·06	300·59	230	Jr. 2	.. ..	Brampton Son of Champion's
Brampton Champion's Pansy (Imp.)	56043	22.8.37	8½	4,287	5·03	215·61	230	Jr. 2	.. ..	Brampton Son of Champion's
Brampton Standard Beauty (Imp.)	56046	17.7.37	16½	6,969	5·12	356·86	230	Jr. 2	.. ..	Brampton Sporting Standard
Brampton Standard Free Girl (Imp.)	56049	7.8.37	15½	6,638	5·79	384·51	270	Jr. 3	320 ..	Brampton Sporting Standard
Brampton Standard Nelly (Imp.)	56050	2.7.37	12½	4,749	6·00	284·90	230	Jr. 2	.. ..	Brampton Sporting Standard
Jubilee Euphoebia ..	44527	3.9.37	13	6,686	5·56	371·55	350	Mature	294, 354, 278	Jubilee Wattlelight
Jubilee Maple	38343	28.8.37	12½	6,706	4·92	330·02	350	Mature	323, 281, 329, 390, 361	Jubilee Whatlight
Jubilee Ricious	38344	14.8.37	15½	5,762	5·55	319·54	350	Mature	264, 327, 352, 357, 388	Jubilee Wheatenlight
Selsey Brown May ..	50566	24.7.37	21	8,375	6·38	534·19	350	Mature	496, 422 ..	Retford Glider
Selsey Design's Wyandotte 2nd	55206	21.8.37	9	4,647	5·94	276·13	270	Jr. 3	350 ..	Selsey Design's Master
Selsey Maple 3rd	59412	14.8.37	14½	5,879	5·03	295·93	230	Jr. 2	.. ..	Brampton Great Boy (Imp.)
Selsey Rose	41947	20.9.37	N.O.C.	6,987	5·59	390·58	350	Mature	381, 492, 421, 504	Jubilee Asterlight
Selsey Roseleaf 3rd ..	59413	24.9.37	15	6,113	5·48	334·79	230	Jr. 2	.. ..	Brampton Great Boy (Imp.)
Soeuorette Franchise (Imp.)	56057	24.8.37	19	7,931	4·99	395·45	350	Mature	431 ..	Soeuorette Fern's Oxford
Noble, T. M., and Sons, Maffra, Jersey (3).										
Finchley Lady Patch ..	48130	9.9.37	16	7,533	5·31	400·06	350	Mature	360, 425, 408	Werribee Lord Burnham
Finchley Master's Canary ..	52727	25.9.37	17	7,701	6·25	481·35	310	Jr. 4	388, 477 ..	Finchley Masterman
Jerseyinn Nasturtium 2nd	33568	11.7.37	18	7,544	5·39	406·46	350	Mature	337, 421, 357, 423, 456	Werribee Bluebell's Masterpiece
Norman, J. G., Pennyroyal, Jersey (15).										
Banaview Daffodil ..	Vol. 25	24.8.37	15	6,306	4·86	306·42	230	Jr. 2	.. ..	Banyarra Nova
Banaview Design ..	C.R.	9.9.37	13	5,645	4·94	278·68	230	Jr. 2	.. ..	Banyarra Nova
Banaview Jonquil ..	47104	17.7.37	23	9,300	4·62	429·88	330	Sr. 4	335, 387 ..	Kantara Starbright's Sultan
Banaview Lilac Domino 7th	Vol. 25	29.7.37	14	5,898	4·82	284·53	230	Jr. 2	.. ..	Banaview Silvermine's Sultan
Banaview Lilac Domino 4th	56240	16.8.37	21	7,325	5·83	426·87	250	Sr. 2	298 ..	Banaview Silvermine's Sultan
Banaview Silvermine 2nd ..	Vol. 25	9.8.37	15	5,417	5·64	305·43	230	Jr. 2	.. ..	Banaview Silvermine's Sultan
Banaview Silvermine 3rd ..	C.R.	29.7.37	14	5,510	5·32	292·93	230	Jr. 2	.. ..	Banyarra Nova
Banaview Springflower ..	47106	16.7.37	19	8,972	4·23	379·18	330	Sr. 4	335, 327 ..	Kantara Starbright's Sultan
Banaview Wildflower ..	C.R.	25.9.37	16	6,219	4·54	282·57	230	Jr. 2	.. ..	Banyarra Nova
Kantara Jonquil	40488	18.7.37	22	8,964	5·18	464·22	350	Mature	412, 491, 460	Glen Iris Valiant Count
Kantara Silvermine ..	40491	28.7.37	18	8,975	5·61	503·93	350	Mature	505, 576, 578	Ku Ku Fashion Plate (Imp.)
Kantara Springflower ..	26203	9.7.37	25	9,888	4·77	471·35	350	Mature	405, 441, 544, 599, 503	Ku Ku Fashion Plate (Imp.)
Selsey Clementine 2nd ..	55205	14.8.37	15	7,300	6·43	469·56	310	Jr. 4	435 ..	Brampton Great Boy (Imp.)
Selsey Design	50567	14.8.37	21½	9,638	5·00	484·71	330	Sr. 4	390, 475 ..	Design's Ruler (Imp.)
Banaview Clementine ..	Vol. 25	9.8.37	14½	4,898	6·14	300·65	230	Jr. 2	.. ..	Banyarra Nova
O'Neill, J., Echuca Village, Jersey (5).										
Ballara Bluebell 4th ..	38007	18.9.37	12	8,531	4·96	423·36	350	Mature	419, 517, 519, 431, 421	Brucevale Lord Fancy Madeira
*Fourshells Heroine 2nd ..	38346	9.9.37	4	6,833	5·06	345·63	350	Mature	352, 333, 330, 316, 321	Belgonia Propeller
Fourshells Yvette ..	38349	13.9.37	12	7,349	4·96	364·66	350	Mature	490, 436, 405, 374	Belgonia Propeller
Ullina Heather Bell ..	46542	31.8.37	13½	6,263	6·21	389·21	350	Mature	407, 428 ..	Ballara Fancy King
Ullina Heather Bell 2nd ..	59830	7.9.37	10½	5,465	6·26	342·37	270	Jr. 3	332 ..	Kyora Dream's Gadget 2nd
Parks, L. A., and Sons, Romsey, Guernsey (1).										
Melbourne Golden Gem ..	4501	30.7.37	10	6,105	5·35	326·90	330	Sr. 4	263, 335, 299	Nundorah Climax
Pattison, F., Tongala, Ayrshire (6).										
Willow Park Amy ..	23342	19.9.37	6½	8,214	3·85	316·10	350	Mature	273, 332, 341, 343, 326	Willow Park Prince
Willow Park Empress ..	26806	5.9.37	11	7,724	3·93	303·48	330	Sr. 4	250, 277, 297	Willow Park Prince
Willow Park Lady ..	24457	29.8.37	18	9,138	4·01	366·16	350	Mature	290, 354, 346	Willow Park Prince
Willow Park Lily ..	26807	24.8.37	7	8,457	3·93	332·07	350	Mature	280, 297, 316	Willow Park Prince
Willow Park Poppy ..	25568	7.8.37	10	9,180	4·09	375·92	350	Mature	352, 407, 372	Willow Park Prince
Willow Park Princess ..	26809	1.9.37	6½	7,527	3·79	285·16	330	Sr. 4	270, 297 ..	Willow Park Prince

* 240 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire
Payne, A. T. E., Lilydale, Guernsey (10).										
Clara's Fashion 7th (Imp.)	6652	7.9.37	31	11,031	4·47	492·61	330	Sr. 4	400, 439 ..	Sunrise of Maple Lodge
Clara's Fashion 8th (Imp.)	6653	4.9.37	24	9,302	4·59	426·53	290	Sr. 3	414 ..	Camilla's Majestic 2nd of Maple Lodge
Yarraview Clara ..	3935	4.9.37	31	10,580	4·60	486·40	350	Mature	413, 433 ..	Sunrise of Maple Lodge
Yarraview Dawn ..	3553	12.9.37	27	8,661	5·05	437·12	350	Mature	350, 413 ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Delight ..	5167	19.8.37	21	8,969	5·04	452·43	330	Sr. 4	400 ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Ella	5168	6.9.37	41	14,289	4·79	685·08	330	Sr. 4	534, 418 ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Royal ..	6642	12.9.37	30	8,730	4·94	431·41	230	Jr. 2	.. ..	Yarraview Sunrise
Yarraview Ruby ..	5178	5.9.37	12	8,895	4·43	394·36	270	Jr. 3	378 ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Siren	6643	8.9.37	26	7,401	5·51	407·47	230	Jr. 2	.. ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Sundrop ..	6645	22.9.37	16	7,036	4·97	349·55	230	Jr. 2	.. ..	Yarraview Sunrise
Phillips, J. H., Speewa, Jersey (3).										
Ryelands Dainty Maid ..	Vol. 25	17.8.37	16	5,526	4·83	266·79	230	Jr. 2	.. ..	Ryelands Black Prince
Ryelands Nanette ..	Vol. 25	15.8.37	10	4,035	5·78	236·26	230	Jr. 2	.. ..	Orphanage Zaffarine Prince
Ryelands Vanilla Slice ..	Vol. 25	29.7.37	14	4,799	5·47	262·73	230	Jr. 2	.. ..	Orphanage Zaffarine Prince
Powell, T. S., Mansfield, Jersey (6).										
Monterey Maid	49602	9.8.37	18	9,036	5·07	460·25	330	Sr. 4	428 ..	Mornmoot Starbright King
Monterey Maid's Mermaid	58528	1.8.37	21½	8,822	4·98	439·11	270	Jr. 3	442 ..	Rosecliff Mariposa's Master
Monterey Melody's Mascot	58530	28.7.37	16½	7,700	5·17	397·87	270	Jr. 3	420 ..	Rosecliff Mariposa's Master
Mornmoot Maid	33125	6.8.37	10	8,097	5·40	437·00	350	Mature	318, 467 ..	Choirmaster of Banyule
Mornmoot Stella Princess ..	45272	15.8.37	16½	7,551	5·18	391·35	330	Sr. 4	349, 428 ..	Werribee Prince Madeira
Wompini Anna Carlovna ..	60084	9.9.37	12	7,661	5·63	431·60	270	Jr. 3	375 ..	Werribee Butter King
Raggatt, F., Tongala, Jersey (6).										
Strathbow Goldie 8th ..	38089	17.9.37	7	5,901	5·18	305·68	350	Mature	288, 347, 316, 402	Banyule Mollerne
Strathbow Goldie 9th ..	37637	16.8.37	17½	7,868	5·26	414·05	350	Mature	290, 353 ..	Banyule Mollerne
Strathbow Goldie 10th ..	38090	24.7.37	16	6,245	5·61	350·54	350	Mature	312, 425, 419	Banyule Mollerne
Strathbow Goldie 11th ..	46226	11.7.37	18	7,758	5·36	415·64	350	Mature	321 ..	Duke of the Lake (Imp.)
Strathbow Goldie 16th ..	59521	22.7.37	15	5,658	5·12	289·94	230	Jr. 2	.. ..	Grangelea Dapper
Strathbow Heather Bell 5th	55313	16.8.37	14½	5,009	5·92	296·60	250	Sr. 2	.. ..	Grangelea Dapper
Read, J. D., Springhurst, Jersey (6).										
Springhurst Angelica Tecoma	50619	25.7.37	20½	8,090	6·04	488·50	310	Jr. 4	359, 418 ..	Bellefaire Seaborn Successor
*Springhurst Aniline Lucerne	55269	1.8.37	..	4,350	6·17	268·23	230	Jr 2	.. ..	Springhurst Design's Analyst
Springhurst Gamboge Tomato	55277	24.8.37	21½	6,965	5·78	402·83	230	Jr. 2	.. ..	Bellefaire Seaborn Successor
Springhurst Sybil Lily ..	41998	18.8.37	15	8,448	6·03	509·49	350	Mature	432, 551, 509, 542	Bellefaire Seaborn Successor
Springhurst Sybil Medick ..	41999	31.8.37	21	9,218	6·04	557·22	350	Mature	356, 376, 524, 577	Bellefaire Seaborn Successor
Springhurst Sybil Tulip ..	55281	13.7.37	17	6,827	6·23	425·45	250	Sr. 2	329 ..	Springhurst Golden Gamboge
Richardson, W. S., Bacchus Marsh, Jersey (9).										
Gladfield Lady Eunice ..	Vol. 25	25.9.37	10	4,455	5·28	235·13	230	Jr. 2	.. ..	Grangelea Dandy Mac
Gladfield Princess Kitty ..	Vol. 25	2.9.37	9	4,681	4·38	204·96	230	Jr. 2	.. ..	Grangelea Dandy Mac
Grangelea Damsel 4th ..	57536	18.9.37	10½	4,277	5·74	245·30	230	Jr. 2	.. ..	Grangelea Daffodil's Airo
Rosyth Banksia Bonnie ..	41900	24.9.37	10	5,267	5·29	278·86	350	Mature	289, 368, 337	Aveley Anthony
Sutton Lea Aria ..	46284	20.7.37	19½	8,879	5·02	445·41	350	Mature	350, 370, 391	Banyule Petalon 2nd
Sutton Lea Marmie ..	59583	14.8.37	12½	5,186	4·74	245·63	250	Sr. 2	.. ..	Sutton Lea Garnap
Sutton Lea Sylvie ..	50727	10.7.37	14½	6,111	5·98	365·29	350	Mature	237 ..	Banyule Petalon 2nd
Sutton Lea Ueline ..	46289	19.9.37	10½	5,959	6·06	360·92	350	Mature	269, 449 ..	Sutton Lea Charnap
Uphaven Bluebell ..	46544	5.8.37	14	5,732	5·77	330·69	350	Mature	292 ..	Wompini Royal Master
Ronalds, O., Tarago, Jersey (8).										
Glen Valley Jessie ..	Vol. 25	23.8.37	22	7,680	4·98	382·64	230	Jr. 2	.. ..	Brucevale Wyandotte's King
Jindivick Heroine 8th ..	57868	8.9.37	15½	9,299	4·73	440·05	270	Jr. 3	.. ..	Somerville Master Babs
Jindivick Heroine 10th ..	Vol. 25	1.8.37	12	7,448	4·72	351·71	230	Jr. 2	.. ..	Somerville Master Babs
Jindivick Valda's Lass ..	Vol. 25	26.8.37	15	7,314	5·42	396·44	250	Sr. 2	.. ..	Somerville Master Babs
Somerville Babs 11th ..	46149	9.9.37	22½	11,321	5·48	620·65	350	Mature	360 ..	Somerville Renown
Somerville Babs 20th ..	Vol. 25	2.9.37	15½	8,130	5·25	426·98	230	Jr. 2	.. ..	Somerville Hall Mark
Somerville Coeur-de-Rose 3rd	Vol. 25	8.8.37	10	5,972	5·14	306·90	230	Jr. 2	.. ..	Somerville Chief Ruler
Somerville Ramona ..	28781	24.8.37	21	7,643	6·36	486·31	350	Mature	491, 502, 624, 542	Banyule Aeronaut

* 240 days in test (sold).

Standard Herd Records—*continued.*

Name of Cow	Herd Book No.	Date of Calving.	Milk last day of Test lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Salesian College, Sunbury, Friesian (8).										
Braemore Princess Domino 7th	Vol. 14	12.9.37	31½	11,250	3·39	381·01	270	Jr. 3	.. ..	Turepo Prince Domino (Imp.)
Elgin Glen Ashlynn ..	4524	19.9.37	39	17,599	3·14	551·98	350	Mature	354, 280, 526	Burnbank Majoe Dutchman
Enterprise Lady Griselda ..	4530	12.7.37	17	10,041	4·24	425·61	310	Jr. 4	313, 312 ..	Graindale Longbeach Hero
Ingolston Jess	4721	13.9.37	32	15,222	3·71	564·53	350	Mature	271, 341, 283	Greenvale Ideal Segis
Ingolston Milkmaid ..	4101	16.8.37	N.O.C.	12,440	3·56	442·79	350	Mature	380, 284, 275	Greenvale Ideal Segis
Rupertswood Bessy ..	Vol. 14	30.7.37	45½	14,462	3·07	443·97	250	Sr. 2	.. ..	Braemore Sylvia's Triumph
Rupertswood Inka Josie ..	4924	10.7.37	17½	10,869	3·57	388·20	290	Sr. 3	270 ..	Cordyline Cremona
Rupertswood Inka Lass ..	C.R.	27.6.37	20	8,423	3·16	266·46	230	Jr. 2	.. ..	Braemore Sylvia's Triumph
Sebire, T., Wandin Yallock, Jersey (2).										
Wandin Cream Piece ..	46592	14.8.37	19½	8,587	5·17	443·64	350	Mature	266, 609 ..	St. Albans Lilac's Supervisor
Wandin Daphne ..	55755	17.9.37	13½	5,936	4·68	277·59	310	Jr. 4	234, 305 ..	St. Albans Lilac's Supervisor
Shearman, A. and W., Darnum, Jersey (12).										
Clarendon Eyre Pinafore 11th	C.R.	30.8.37	12	5,735	5·33	305·57	230	Jr. 2	.. ..	Clarendon Eyre Oxford Dreamer
Darnum Park Eminence Ha Ha	Vol. 25	4.7.37	15	7,744	5·35	414·37	270	Jr. 3	361 ..	Darnum Park Starbright's Masterpiece
Darnum Park Leonie ..	Vol. 25	18.8.37	5	3,555	6·35	225·89	230	Jr. 2	232 ..	Darnum Park Starbright's Masterpiece
Darnum Park Perfection ..	Vol. 25	4.7.37	8½	5,594	6·84	382·43	290	Sr. 3	289 ..	Oak Park Goldfinder
Darnum Park Princess ..	Vol. 25	29.8.37	12	5,736	5·97	342·72	250	Sr. 2	312 ..	Darnum Park Starbright's Masterpiece
Darnum Park Princess 2nd	Vol. 25	27.8.37	12	5,931	4·90	290·54	230	Jr. 2	.. ..	Darnum Park Leonie's Attraction
Oak Park Royal Duchess ..	45496	28.8.37	13½	7,222	5·71	412·60	350	Mature	368, 469, 430	Brucevale Lord Fancy Attraction
Oak Park Sweet Lady ..	45498	4.7.37	7	5,606	6·69	375·32	350	Mature	372, 370, 507, 316	Brucevale Lord Fancy Attraction
Sleepy Valley Milkmaid ..	59447	4.7.37	17	6,533	5·83	380·63	350	Mature	315, 470, 463, 389	Holly Dell Twylish
Wompini Leonie 12th ..	C.R.	30.8.37	12	4,113	5·69	233·94	230	Jr. 2	.. ..	Wompini Earl King
Darnum Park Starbright ..	Vol. 25	28.8.37	10½	7,266	6·07	441·17	230	Jr. 2	.. ..	Darnum Park Starbright's Masterpiece
Oak Park Princess 2nd ..	41321	3.7.37	17	8,231	5·50	452·95	350	Mature	365, 490, 392	Brucevale Lord Fancy Attraction
Smith Bros., Mirboo North, Jersey (23).										
Duchess 4th of Goulburn ..	11711	4.8.37	11	6,384	5·52	352·56	350	Mature	517, 490, 347	Rufus of Melrose
Sylvan Hill Alma Belle ..	42089	3.8.37	15½	6,564	5·39	353·97	350	Mature	279, 349, 400, 329, 352	Somerville Heir Apparent
Sylvan Hill Beauty 2nd ..	Vol. 25	15.9.37	10½	4,997	6·03	302·93	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Bonnie Mary ..	55377	5.9.37	9	7,685	5·48	421·31	310	Jr. 4	301, 409 ..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Bouquet ..	59600	20.9.37	8½	4,451	7·12	317·00	270	Jr. 3	264 ..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Bright Tissue ..	23445	3.9.37	13	6,013	4·53	272·15	350	Mature	453, 392, 444, 323, 369	Buttercraiks 2nd of Jersey Hill
Sylvan Hill Brunette ..	59601	22.8.37	12	4,613	5·50	253·73	270	Jr. 3	223 ..	Sylvan Hill Starlight's Pride
Sylvan Hill Buttercup ..	46299	20.9.37	10	6,750	5·81	391·98	350	Mature	256, 373, 423	Somerville Heir Apparent
Sylvan Hill Charm ..	46300	3.9.37	4	7,430	4·95	367·54	350	Mature	286, 426, 347, 432	Somerville Heir Apparent
Sylvan Hill Charmaine ..	55378	31.8.37	10½	6,384	5·71	364·65	310	Jr. 4	232, 344 ..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Duchess ..	50736	28.8.37	15½	8,858	5·77	510·99	350	Mature	409, 350, 427	Somerville Heir Apparent
Sylvan Hill Empire Queen	50737	9.8.37	18	7,237	5·39	392·98	350	Mature	311, 306, 379	Somerville Heir Apparent
Sylvan Hill Handsome Bell	Vol. 25	30.8.37	11½	4,958	5·96	295·31	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Handsome Girl	33762	3.8.37	14½	6,723	5·94	399·58	350	Mature	419, 360, 429, 381, 450	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Joyful ..	50738	24.7.37	14	8,130	5·79	471·00	350	Mature	345, 337, 397	Somerville Heir Apparent
Sylvan Hill Lady Alma ..	38282	7.8.37	14½	8,352	5·29	441·88	350	Mature	363, 364, 409, 380, 500	Somerville Heir Apparent
Sylvan Hill Lady Bells ..	Vol. 25	28.8.37	9½	4,718	5·97	281·58	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Lily 3rd ..	Vol. 25	5.9.37	11	4,743	6·67	316·34	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Linda ..	Vol. 25	10.9.37	14	5,742	5·69	326·78	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Molly's Bell ..	Vol. 25	26.8.37	8½	4,775	5·28	251·89	230	Jr. 2	.. ..	Glen Iris Bow Bells
Sylvan Hill Noble Bells ..	Vol. 25	11.9.37	9	4,005	6·37	255·10	230	Jr. 2	.. ..	Glen Iris Bow Bells
*Sylvan Hill Noble Lady ..	38283	20.9.37	4	5,865	5·64	330·76	350	Mature	304, 304, 325, 305, 369	Somerville Heir Apparent
Sylvan Hill Peeress ..	46302	7.8.37	15	6,006	4·98	299·38	350	Mature	276, 371, 368, 421	Sylvan Hill Starlight's Pride
Sylvan Hill Primrose ..	38284	21.9.37	5	7,005	5·52	386·68	350	Mature	392, 376, 460, 428, 378	Somerville Heir Apparent
Sylvan Hill Princess Pat ..	Vol. 25	14.9.37	9	3,657	6·67	243·92	230	Jr. 2	.. ..	Sylvan Hill Handsome Pat
Sylvan Hill Rock Lily ..	46304	15.9.37	11	6,003	6·29	377·79	350	Mature	264, 377, 351, 394	Somerville Heir Apparent
Sylvan Hill Sparkle ..	46305	4.8.37	9½	8,978	4·71	423·12	350	Mature	306, 389, 401	Somerville Heir Apparent
Sylvan Hill Vanity ..	50740	20.9.37	11	7,563	5·19	392·86	330	Sr. 4	321, 309, 373	Somerville Heir Apparent

* 240 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Stephens, Dr. F. G., Vermont, Guernsey (3).										
Bangalam Vale Fairy ..	3975	1.8.37	16½	7,160	4·77	341·36	350	Mature	332, 356 ..	Minnamurra Sequel Slogan
Kentdale Kathleen ..	4312	27.7.37	14½	7,350	4·90	360·34	310	Jr. 4	242, 339 ..	Kentdale Tomboy
Vermont May Belle ..	5187	3.9.37	20	8,033	4·57	367·20	310	Jr. 4	345 ..	Majestic of King's Mills
Stirling, H. V., Mead, Jersey (1).										
Banyule Ishta	51650	9.8.37	16	6,310	5·50	346·87	230	Jr. 2	.. ..	Banyule Pitman
Stoney, W. B., Drouin West, Jersey (7).										
Melview Jenny Lind ..	29393	10.7.37	15	6,696	5·67	379·99	350	Mature	284, 262, 283, 371, 317	Sunburst of Melrose
Tarago Gem 3rd	55421	11.7.37	9	6,729	4·47	300·70	330	Sr. 4	274 ..	King's Vale Dolly 4th's Son
Tarago Jenny Lind ..	55423	4.7.37	9	5,414	5·06	274·06	330	Sr. 4	236 ..	King's Vale Dolly 4th's Son
*Tarago Mystery ..	46339	14.7.37	4	3,495	5·76	201·32	350	Mature	251, 314, 318, 307	Jerseyholm Handsome Boy 12th
Tarago Mystery 2nd ..	59630	3.9.37	11½	6,305	5·52	348·13	310	Jr. 4	.. ..	Glenesk Eminent's Lightnin' 2nd
†Tarago Mystery 3rd ..	59631	7.7.37	4	4,659	5·45	254·13	290	Sr. 3	240 ..	Edmonton Island Chief
Tarago Mystery 4th ..	Vol. 25	26.8.37	12	6,011	6·13	368·63	270	Jr. 3	.. ..	King's Vale Dolly 4th's Son
Thomas and Taylor, Hamilton, Ayrshire (2).										
Carracoorte Betsy 25th ..	28166	23.9.37	18	9,606	4·49	431·38	330	Sr. 4	305, 317 ..	Carracoorte Panic
Jennewar Bonnie ..	27421	9.8.37	15½	9,275	4·76	441·25	330	Sr. 4	341, 344 ..	Carracoorte Panic
Tomasetti, B. G., Drouin West, Ayrshire (10).										
Glen Athol Alma ..	23798	23.9.37	20	8,067	4·10	331·01	350	Mature	.. ..	Glen Athol Brilliant
Glen Athol Merry Lass ..	C.R.	28.8.37	15½	5,705	4·54	259·03	230	Jr. 2	.. ..	Glencorren Merry Lad
Glencorren Dairymaid ..	C.R.	24.9.37	15½	6,778	4·01	271·58	230	Jr. 2	.. ..	Holly Green Design
Glencorren Foam ..	21505	13.9.37	24	8,517	4·84	412·10	350	Mature	307, 444, 431, 481, 421, 464	Glen Athol Brilliant
Glencorren Hallmark ..	C.R.	31.7.37	15	7,512	4·27	320·55	290	Sr. 3	210 ..	Scotswood Michael 2nd
Glencorren Molly ..	30528	1.8.37	16	7,974	4·45	354·88	270	Jr. 3	214 ..	Scotswood Michael 2nd
Glencorren Peace ..	30529	12.9.37	19½	7,124	4·04	287·88	230	Jr. 2	.. ..	Holly Green Design
Glencorren Valmai ..	30530	28.7.37	12	7,116	4·50	320·07	270	Jr. 3	234 ..	Scotswood Michael 2nd
Glencorren Venus ..	26202	3.7.37	25½	10,498	3·90	408·95	350	Mature	254, 356, 311	Scotswood Michael 2nd
Glencorren Violetta ..	20120	29.8.37	21	9,183	3·84	352·71	350	Mature	271, 317, 506, 472, 500, 409, 429	Glen Athol Jimmie
Trevaskis, F. T., Tongala, Jersey (5).										
Ballara Ideal 5th ..	47094	19.9.37	9½	6,546	5·10	333·97	290	Sr. 3	.. ..	Ballara Fancy King
Ballara Ideal 7th ..	56227	10.8.37	11	6,216	5·23	325·24	230	Jr. 2	.. ..	Kyora Dream's Gadget 2nd
Ballara Model 12th ..	51629	21.8.37	12½	4,502	5·52	248·46	250	Sr. 2	.. ..	Kyora Dream's Gadget 2nd
Carinya Black Rose ..	52138	9.8.37	13½	6,633	4·67	309·60	270	Jr. 3	.. ..	Werribee Twylish Master
The Valley Frisky Stumpy	59696	28.8.37	11½	6,725	5·44	365·55	270	Jr. 3	.. ..	Glen Iris Beau
Trewin, J. V., Nathalia, Jersey (9).										
Belgonia Blossom 7th ..	29112	31.8.37	14	8,238	4·99	411·22	350	Mature	474, 484 ..	Aerial of Banyule
Weir View Blossom's Design	51160	2.8.37	18	6,936	5·10	353·52	270	Jr. 3	.. ..	Design's Ruler (Imp.)
‡Weir View Golden Blossom	55818	25.8.37	..	4,590	5·28	242·46	230	Jr. 2	.. ..	Weir View Golden Duke
Weir View Golden Design	55819	19.8.37	16	6,389	5·16	329·66	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Weir View Golden Design 2nd	59968	2.9.37	17	5,993	5·40	323·39	230	Jr. 2	.. ..	Weir View Golden Duke
Weir View Golden Duchess	51161	26.8.37	15½	8,886	4·95	439·55	330	Sr. 4	385, 398 ..	Duke of the Lake (Imp.)
Weir View Golden Duchess 2nd	51162	16.8.37	22½	6,791	5·31	360·50	250	Sr. 2	347 ..	Weir View Laddie 2nd
*Weir View Golden Greetings	55820	9.7.37	4	3,960	5·05	199·83	230	Jr. 2	.. ..	Weir View Golden Duke
Weir View Greetings ..	42459	18.8.37	15	7,427	5·01	371·81	350	Mature	323, 434 ..	Belgonia Milk Lad
Vagg, E. J., Leongatha, Jersey (12).										
Bonnay Amanda's Doris ..	51865	29.8.37	17	7,842	5·12	401·50	290	Sr. 3	307, 364 ..	Jerseyinn Edith's Masterpiece
Bonnay Lady's Amanda ..	38975	12.9.37	17	7,749	4·89	378·57	350	Mature	266, 261, 267, 339, 368	Welbourne Handsome Boy
Bonnay Love's Elaine ..	Vol. 25	3.8.37	13	4,811	6·33	304·34	230	Jr. 2	.. ..	Bonnay Edith's Masterstrain
Bonnay Midget's Winnie ..	38976	11.7.37	21½	7,090	5·70	404·47	350	Mature	339, 336, 360, 408	Welbourne Handsome Boy
Bonnay Miss Stella ..	Vol. 25	24.9.37	17½	5,079	5·40	274·04	230	Jr. 2	.. ..	Jerseyinn Edith's Masterpiece
Bonnay Mona's Jessie ..	56464	30.8.37	17½	7,091	5·61	398·09	250	Sr. 2	332 ..	Jerseyinn Edith's Masterpiece
Bonnay Mystery's Lilac ..	26465	25.9.37	10	5,426	6·45	349·82	270	Jr. 3	209, 316 ..	Bonnay Love's Masterman
Bonnay Mystery's Maid 4th	38977	22.7.37	20	7,460	4·57	340·56	350	Mature	280, 300, 295, 369, 405	Bonnay Handsome Boy
Bonnay Phyllis	38978	6.9.37	15½	7,221	4·92	355·04	350	Mature	301, 357, 389, 364, 449	Welbourne Handsome Boy
Jerseyinn Edith 2nd ..	38450	26.7.37	37	14,288	5·78	826·14	350	Mature	438, 608, 678, 750	Werribee Bluebell's Masterpiece
Rosyth Lady Tulip 3rd ..	38451	27.8.37	13½	7,769	5·67	440·52	350	Mature	288, 387, 415, 446, 444, 504	Lord 2nd of Brucevale
Rydon May Queen 2nd ..	55151	5.9.37	29½	12,666	5·12	648·26	310	Jr. 4	379, 452 ..	Melrose Migrant

* 240 days in test. † 252 days in test. ‡ 240 days in test (sold).

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Van Brummelen, J. K., Notting Hill, Friesian (2).										
Bolero Sylvia's Venus ..	3874	5.9.37	42½	18,210	3·29	599·89	350	Mature	320, 339, 566, 587, 457	St. Alban's Queen Korndyke 2nd
Bolero Venus Dawn ..	Vol. 14	24.8.37	29½	11,925	3·65	435·20	250	Sr. 2	.. ..	Winlaton Pioneer
Vaughan Bros., Girgarre, Jersey (6).										
Lynroy Fancy 4th ..	Vol. 25	25.8.37	4	4,919	5·45	268·15	250	Sr. 2	382 ..	Werribee Laverock
Lynroy Glad Eye ..	C.R.	22.9.37	13½	6,131	5·40	331·24	230	Jr 2	.. ..	Werribee Laverock
Lynroy Gladys 4th ..	Vol. 25	12.8.37	18	7,130	5·58	397·96	230	Jr. 2	.. ..	Werribee Laverock
Lynroy Jasmine	58251	22.8.37	13	5,207	5·60	291·48	350	Mature	367, 425 ..	Werribee Laverock
Lynroy Natty 2nd ..	Vol. 25	18.9.37	15½	6,612	5·43	358·94	230	Jr. 2	.. ..	Werribee Laverock
Lynroy Princess Gladys ..	Vol. 25	3.9.37	16	8,394	5·67	475·66	330	Sr. 4	368 ..	Werribee Laverock
Wade, W. J., Stratford, Jersey (5).										
Glen Iris Golden Belle ..	52814	8.9.37	14½	5,040	5·83	293·63	230	Jr. 2	.. ..	Design's Golden Oxford (Imp.)
Inverbroom Bunty's Empress	57760	28.8.37	16	6,141	4·84	297·38	230	Jr. 3	.. ..	Grangelea Butter Boy 3rd
Inverbroom Molly's Bunty	57762	17.8.37	16	5,733	5·05	289·43	230	Jr. 2	..	Grangelea Butter Boy 3rd
Inverbroom Silver Bunty ..	53273	26.8.37	14	6,950	4·43	307·96	250	Sr. 2	284 ..	Economist of Aveley
Inverbroom Silver Muriel 3rd	53274	22.8.37	17	6,964	5·29	363·46	250	Sr. 2	239 ..	Economist of Aveley
Walker, C. S., Swan Hill, Jersey (9).										
Glen Iris Golden Design ..	52816	12.9.37	13	5,334	5·24	279·43	230	Jr. 2	.. ..	Design's Golden Oxford (Imp.)
Grangelea Rose 5th ..	48525	15.9.37	21	8,068	4·48	361·46	290	Sr. 3	309, 366 ..	Banyule Macon
Grangelea Rose Marie ..	57547	13.9.37	17	6,344	4·50	285·64	230	Jr. 2	.. ..	Grangelea Roderick
Staghorn Cello 3rd ..	Vol. 25	23.9.37	19	6,003	5·17	310·13	230	Jr. 2	.. ..	Staghorn Lord Aldan
Warwick Beauty 4th ..	Vol. 25	19.9.37	13	5,679	4·76	270·53	230	Jr. 2	.. ..	Glen Iris Golden Lord
Warwick Beauty 5th ..	Vol. 25	16.9.37	9	4,339	4·45	194·97	230	Jr. 2	.. ..	Glen Iris Golden Lord
Warwick Cream Stockings	59944	24.9.37	20	7,236	4·97	360·78	270	Jr. 3	295 ..	Bellaire Starlight
Warwick Polly 4th ..	59945	1.7.37	10	5,890	5·59	329·12	290	Sr. 3	265 ..	Glen Iris Golden Lord
Warwick Princess Irene ..	33489	20.7.37	20	8,361	4·43	370·33	350	Mature	305, 363, 317, 293,317	Chevrolet of Banyule
Warragul High School, Warragul, Red Poll (7).										
*Gipps Barbara	3120B	17.9.37	4	6,615	3·51	232·38	350	Mature	230, 166, 293, 216, 238	Woodburn, Laureate
Gipps Cherie	2624A	22.9.37	6	5,141	3·67	188·73	270	Jr. 3	188 ..	Naranghi Wizard
Gipps Dorothea	2875A	25.7.37	7½	5,844	4·01	234·23	350	Mature	216, 205, 279, 254, 284	Woodburn Laureate
†Gipps Fiona	2388B	28.7.37	4	6,912	3·64	251·51	350	Mature	287, 344, 264, 375, 345	Woodburn Laureate
Gipps Lady Rosalind ..	4628A	2.7.37	9½	4,151	4·54	188·61	230	Jr. 2	.. ..	Oakwood Butler
*Gipps Zora	2883A	10.9.37	4	5,895	3·46	203·82	350	Mature	237, 266, 370, 303, 280	Woodburn Laureate
*Gipps Zuleika	3663A	29.6.37	4	4,590	4·05	186·06	330	Sr. 4	242, 243 ..	Gipps Byron
Watson, K., Upper Pakenham, Jersey (3).										
Goronga Farm Madeira's Modesty	57522	5.9.37	10	5,060	5·77	291·86	270	Jr. 3	265 ..	Werribee Prince Madeira
Goronga Farm Star Turn ..	Vol. 25	25.8.37	9½	5,364	5·65	303·32	230	Jr. 2	.. ..	Somerville Reputed King
Mornmoot Modiste 2nd ..	33140	29.7.37	5½	6,519	5·85	381·28	350	Mature	360, 411, 453, 408, 353	Werribee Prince Madeira
Williams, F. A., Bamawm Extension, Jersey (4).										
Taranah Ruby 2nd ..	42120	25.8.37	11	6,258	5·33	333·64	350	Mature	280, 335, 279, 306	Duke of Invermay
Bamawm Primrose ..	47102	31.8.37	22	9,834	5·36	527·00	290	Sr. 3	471, 582 ..	Bamawm Bonnie Boy
Bamawm Mistress Peggy ..	56238	11.9.37	20	7,517	5·61	422·02	270	Jr. 3	373 ..	Bamawm Bonnie Boy
Bamawm Bonnie Lass ..	47099	16.9.37	17	7,583	6·44	488·64	330	Sr. 4	419 ..	Bamawn Leon
Wilson, A., Port Fairy, Ayrshire (5).										
Carracoorte Bellona 22nd ..	28165	16.9.37	12½	7,253	3·86	280·16	290	Sr. 3	263 ..	Carracoorte Boomerang
Carracoorte Brownie 22nd	24681	11.9.37	11½	7,025	4·03	282·79	350	Mature	202, 241, 312	Gerty's Producer of Carracoorte
Carracoorte Viola 34th ..	29211	17.9.37	17½	7,764	3·85	299·28	270	Jr. 3	247 ..	Grand View Bernie
Gowrie Park Music ..	27328	13.9.37	10	6,963	3·94	274·09	330	Sr. 4	308 ..	Gowrie Park Scottish Standard
Green Vale Beauty 5th ..	28554	14.7.37	15½	9,519	3·70	352·14	350	Mature	.. ..	Carracoorte Squire

* 240 days in test. † 253 days in test.

By Authority: H. J. Green, Government Printer, Melbourne.